

THE MARINE RECORD.

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THE EARLY INVENTORS.

Our readers will find considerable interest in comparing the steamboat illustrated in the following article with the greatly improved steamers of the present day. The data, which has been secured only at great expense and care, is the work of Mr. G. C. Purdy, of Salem, Ohio, special census agent for the Department of the Interior. Mr. Purdy, in his compilation of facts and figures relative to the history of steam navigation, has been exceeding fortunate as regards the accuracy of the information he lays before us. The illustrations, which, by the way, are works of art, and done by the Standard Engraving Co., Cleveland, for the MARINE RECORD, will convey a more perfect idea of the appearance of the steamer of "ye olden time," than can be obtained from a bare description. Mr. Purdy says:

The events that led up to the perfection of Fulton's first steamboat, the Clermont, in 1807, were long in maturing.

In England, as far back as 1578, a man by the name of Bourne obtained a patent for a boat to be propelled by means of wheels at the sides.

David Ramsay in 1680 procured letters for a method of making ships and barges to go against wind and tide. Other methods of propulsion were patented by Thomas Grent in 1632, Francis Lin in 1637, Edward Forde in 1640, the Marquis of Worcester in 1667, and Thomas Toogood in 1661.

In 1682 a horse-boat moved by wheels at the side was tried at Chatham, and used as a towboat. In 1730 Dr. John Allen proposed to move a boat by pumping in water and ejecting it from the stern, and Johnathan Hulls produced a plan for navigating a towboat by a stern wheel worked by steam. It does not appear, however, that any boat was ever built by Hulls.

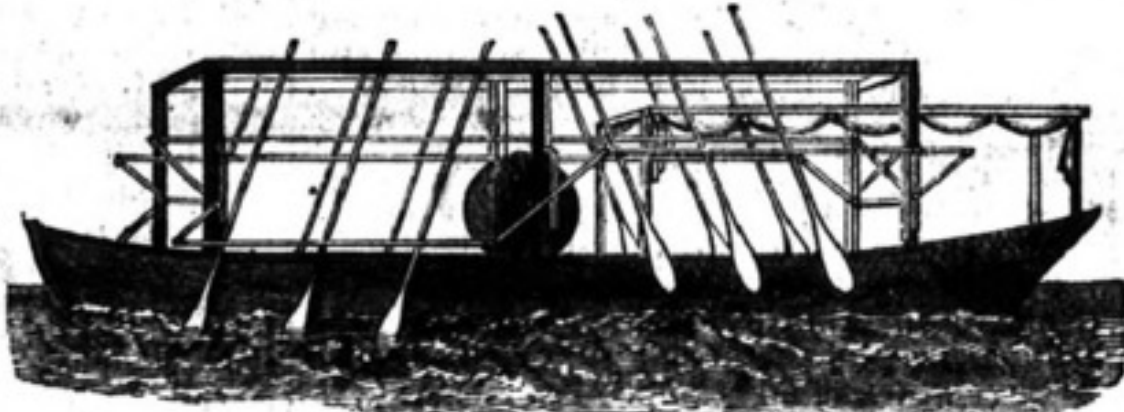
In France the Count Auxiron made some experiments on the Seine in 1774, and they were repeated the next year with more success.*

In 1782 De Jouffroy on the Saone moved a boat 140 ft. long by a steam engine attached to paddle wheels on the sides.*

This brings us down to the date of the first experiments in this country. During the closing years of the last century James Rumsey, of Virginia, and John Fitch of Pennsylvania had a long war of pamphlets upon the merits of their invention and their claims to priority.

In 1786 Fitch moved a skiff boat with a three-inch cylinder. In 1787 bills granting exclusive rights in the steamboat to John Fitch for fourteen years were passed by the legislatures of Pennsylvania, Delaware, New York and Virginia. In August of this year a second boat was built by Fitch for machinery with a 12-inch cylinder, and several passages were made between Philadelphia and Burlington at the rate of about four miles per hour. This boat, as shown in Fig. 1, was driven by paddles, six on a side; as six came out of the water six more entered, making a stroke of some eleven feet for each revolution of the engine. Another boat for an engine with an 18 inch cylinder was ready for trial in August, 1789. Changes in the machinery, which were found to be necessary, occupied the time till the spring of 1790, when the boat was run regularly and advertised to carry passengers between Philadelphia and Burlington, making an average speed of 7½ miles an hour, and running over 2,000 miles that season. This boat was driven by paddles at the stern, as shown in Fig. 2. It did not, however, prove a paying project, and the company withdrew from the line after

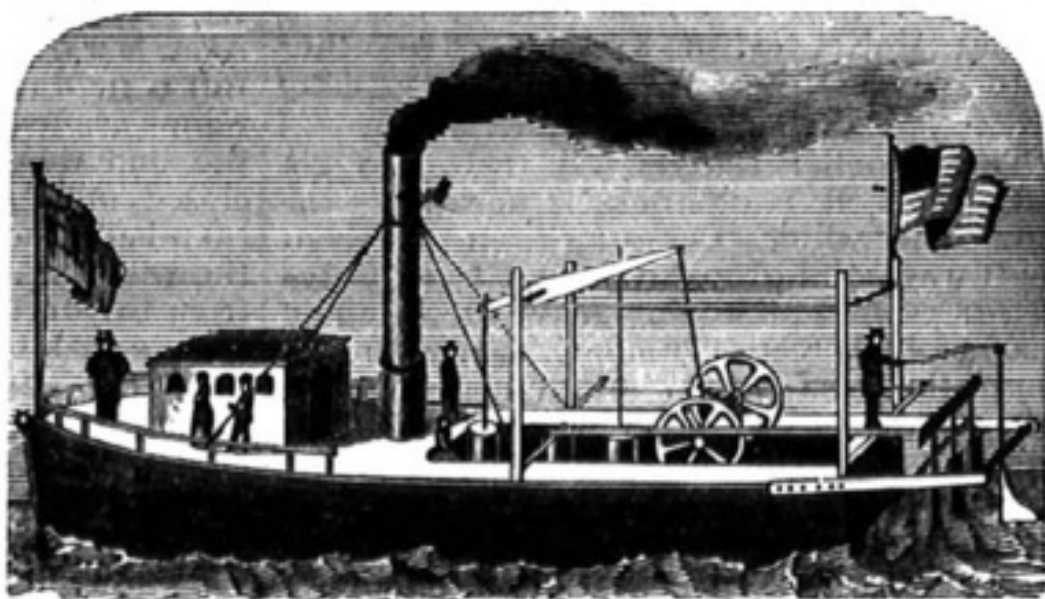
this season. Regular patents were issued to Fitch and to Rumsey by the United States authorities on August 26, 1791; and to Jehoshaphat Starr, of Connecticut, April 28, 1797; Edward West, of Kentucky, July 6, 1802; Dr. William Thornton, of Washington, District of Columbia, January 16, 1809; Daniel French, of New York, October 12, 1809; John Stevens, of New Jersey, January 3, 1810; Samuel Bolton, of Philadelphia, November 1, 1820; Michael Morrison, of Boston, January 17, 1811; Robert Fulton, of New York, February 9, 1811. In 1796 Fitch, on his return from Europe, placed a small boat on the Collect pond in New York, which was worked by a screw propeller, but it was a very primitive affair. The boiler was a ten or twelve gallon pot, with a plank lid. The cylinder was of wood, barrel-shaped on the outside, and strongly hooped. It worked, however, and the boat was propelled once or twice around the pond before the steam was exhausted. Fitch then went to Kentucky, where he met with little encouragement in his project of establishing his inventions on the western rivers. His health failed, but he still kept at work upon his invention, and made a model boat about three feet long, which was still in



FITCH'S FIRST BOAT.

existence in 1854 at Saint Louis. This boat was provided with side wheels, and was a working model. This was his last work. Disappointed and neglected, he terminated his life at Bardstown, Kentucky, in 1798, by taking an overdose of opium, which he had saved for that purpose from prescriptions of his physician.

James Rumsey, of Shepherdstown, Virginia, it appears, constructed a boat in 1784 propelled by a series of "setting-poles," which was exhibited before General Wash-



FITCH'S SECOND BOAT.

ington at Bath, in Berkeley county, Virginia, and he received a certificate of its efficiency from the general, dated "this 7th day of September, 1784." The character of this boat is, however, somewhat doubtful. Four years later Rumsey constructed a boat upon a plan which might have been suggested by or borrowed from Thomas Toogood, Dr. John Allen, or Dr. Franklin. It consisted in the employment of steam to pump water into the bottom of the boat and force it out again at the stern, the resistance moving the boat forward. The question in dispute with Fitch was whether this first "mechanical" or "pole boat" was operated by steam. Rumsey could not operate his boat in this country on account of Fitch's patent, and he went to London, where he took out several patents and made some experiments on the Thames. Hedded in England in 1793.

Beside "A Short Treatise on the Application of Steam," published in 1788, Rumsey left several pamphlets, among them one entitled "Explanation of a steam engine, and the method of applying it to propel a boat."

*Stewart's Anecdotes of Steam Engines, page 283.

AROUND THE LAKES.

CLEVELAND.

The river tug Samson has been temporarily laid up. She is receiving some repairs to her machinery in Pressley's slip. The Queen City has also been laid away for awhile.

Captain S. Gibson, the well-known Buffalo shipbuilder, is in the city this week, looking after the interests of his barge R. J. Carney, which is receiving some repairs at Pressley's slip.

On and after October 25th, a ten-inch steam whistle will be sounded at Passage Island light station during thick, foggy weather, giving blasts of five seconds duration, followed by intervals of twenty-five seconds.

At the Globe drydock the steambarge Cleveland is getting her topsides calked, a new stem iron, her stern bearings fixed, pintel to her rudder, and some patches on her wheel. The barge R. J. Carney is getting new corner pieces inside and out and some new plank.

The case of Phillip Mirish and others, owners of the steambarge John N. Glidden, against the steam tug Mystic, of Sandusky harbor, has been settled and dismissed. The action was brought to recover \$517.25 claimed as damages resulting from the barge being grounded in Sandusky harbor while in tow of the tug on the 20th of September, last.

Just half a century ago the schooner Prince Eugene was lost on Lake Michigan. She was valued, with her cargo, at \$27,000 and was considered one of the finest schooners afloat; and thirty-three years ago to-day the schooner Saratoga, laden with corn, was sunk in Lake Erie, by collision with the steamer Buckeye State, whereby four men lost their lives. The property was valued at \$8,500.

The new iron steamer at the Globe Iron Shipyard is fast assuming shape and will be closed in this fall. The water bottom, which will be forty inches deep, will have a capacity of 550 tons. The floors are two feet apart, and the keelsons, of which there are three on each side, independent of the bilge keelsons, are four feet from centers, the center keelson being forty inches deep made of ¾ inch plate. There will be three bulkheads on each side.

Appearances indicate that the body washed ashore at Perry, Lake county, O., is that of a sailor, about forty-five years of age, having dark hair mixed with gray, dressed in dark pants, navy blue woolen shirt, white drawers and wrapper. His right arm is tattooed with figures of two persons, male and female, standing side by side in front of an American flag. What appears to be the initials, "D. E. Y. M.," are on the arm, but so indistinct that only the "M" is plainly visible. The body has the appearance of having been in the water some time. Samuel Wire, of Perry, O., will furnish further information concerning the body.

The Cleveland fire commissioners, who have been on an inspection visit to New York, where they examined the fire tug system, returned Tuesday. They found two fire tugs in that city, built much after the model of the one we have advocated, with the exception that they are not calculated to do service as ice breakers. The commis-

sioners were informed that these tugs made about fourteen runs per month and were considered indispensable adjuncts to the New York fire department. It is to be presumed that our commissioners are now ready to add this necessary reinforcement, an iron fire tug, to Chief Dickinson's command without delay.

Our Frankfort correspondent, who last week stated that the propellers Lawrence and Champlain were the only boats left of the old Northern Transportation Line, has forgotten the propeller Nashua, which still runs in the early months of navigation as a passenger boat and about the first of September has her character changed to a freight carrier. The Nashua, which was built at Cleveland by Lafriner, in 1868, measures 440 tons, is owned at Detroit by W. E. Wariner, is classed B1 and received extensive repairs this spring. She is valued for insurance at \$15,000, and plies between Ogdensburg and Toledo, calling at this port.

It is thought that the difficulty between Captain Gibson, owner of the barge R. J. Carney, and the owners of her cargo of lumber, which was loaded at Au Sable and consigned to Monroe Bros., will be settled. Captain Gibson, who was in the city this week, desired to have H. D. Goulder, Esq., take charge of his case, but found that he had been retained by the other side. The Carney sprung a leak in Saginaw Bay, and fearing the loss of her deck load of lumber, put into Sand Beach in a waterlogged condition, where her captain filed a protest, which, not being in due form, as the captain was not well up in the protest business, the shipper or owners of the lumber objected to paying the expense consequent upon the efforts to save it. The Carney, after receiving repairs, will return to Saginaw with a cargo of coal, and the barge Waverly to Detroit with a like commodity. It is believed that the captain of the Carney delivered the cargo without having a general average bond signed, which enabled the consignees to avoid paying their share of the expense or paying salvage for the lumber saved.

CHICAGO.

Special to the Marine Record.

Charters are scarce, freights ruling at 1½ cents for corn and 1¾ cents for wheat to Buffalo. Charters for lumber are hard to obtain.

The iron steamship Onoko arrived on Monday from Buffalo with 2,600 tons of coal.

The schooner A. J. Mowry, of this port, which was ashore last week near Hamlin, Mich., has been released. She sustained very little damage.

The schooner Lotus lost another jibboom last week by collision, when in tow of a tug in the river.

The schooner Pilgrim was libeled last week for \$165, wages due to the crew.

The propeller H. E. Packer collided with the tug Robert Tarrant, when coming down the river, and damaged her pilot house.

The schooner Ironsides, lumber laden for this port, was forced to run into Milwaukee Sunday night. She had lost her foresail and split her mainsail.

The schooner Lillie Pratt, in tow of the tug Satisfaction, collided with a canal boat in the river Monday. The schooner's bowsprit and bobstay received some damage, as did also the canal boat's stern.

[Continued on 4th page.]

MARITIME LAW.

**COLLISION—TUG AND TOW—STEAMERS UN-
CUMBERED BOUND TO KEEP OUT OF THE
WAY.**

(Dis. Court, S. D. New York, July 25, 1884.)

A steamer having easy and perfect command of her own movement is bound to keep out of the way of a cumbersome tow going slowly with the tide where there is nothing in the way to prevent the steamer's doing so. The steamer M., coming up the bay, sighted a tug with a heavy tow on a hawser, going down, being altogether 800 feet long, and some two miles distant. She was at first to the westward of the tow, but worked across to the eastward, and finally came in collision with the end of the port side of the tow. On contradictory evidence as to the place of collision, and whether the steamer was in motion or not, held, that the steamer had abundant room to avoid the tow on either side; and that whether she had stopped her engines or not, during a debate as to whether she should go to Red Hook or Brooklyn, she was equally at fault in not keeping out of the way of the tow.

In admiralty.

E. D. McCarthy and J. A. Hyland, for libelants.

Goodrich, Deady & Platt, for claimants.

Brown, J. On the third of December, 1882, at about 11 a. m., as the steamer Mayumba was coming up from quarantine, when not far from Bedloe's island she met a large tow going down, and came into collision with the port side of it, near the end of the tow, whereby several of the boats and their cargoes were damaged, on account of which the above six libels were filed. The day was clear; the bay unobstructed; the wind fresh from the northwest, blowing about 14 miles per hour; the tide last of the ebb; the tow running at about the rate of 3 to 3½ knots per hour through the water. The tow consisted of some 30 boats, in 5 or 6 tiers, attached by hawsers about 80 feet long to the two tugs, Wilbur and Halliard, so that the whole length of the fleet was about 800 feet. The tow left Jersey City at about 9:40 a. m., bound for Perth Amboy, via the Kills. Its course was first across the North river, to near the New York shore; thence to the south eastward, to avoid some incoming vessels; thence down stream past Governor's island, and about a quarter of a mile to the westward of Castle William; and thence heading west southwest, crossing the channel somewhat to the westward, towards the Jersey shore, to the northward of Robbins' reef.

There is great conflict in the testimony as to the place of the collision. The substantial claim of the defense is that the Mayumba had run as far to the eastward as she could safely go, having got to the easterly line of the channel, and to the edge of the flats off Red Hook. Her captain testifies that when he saw the collision impending he directed her tug, the Raymond, to shove her bows further eastward, but that the pilot in charge countermanded his order, saying: "Don't do that, captain; we are ashore now." The pilot died before the trial, and his testimony was not previously taken, to confirm any inference which might naturally be drawn from this remark as to their proximity to the east line of the channel. The language attributed to him is in form an exaggeration; and there are so many inaccuracies in the master's testimony that the other proofs cannot be suffered to be outweighed by an alleged statement by the pilot of this character, not substantiated by his own oath as to his language or its truth. The other proofs leave no doubt in my mind that the tow, at the time of the collision, was not near the flats referred to; but abreast of a point somewhere between Bedloe's Island and Oyster Island, and at least a quarter of a mile to the westward of the easterly line of the channel. The two tugs that had charge of the tow were fully able to handle it readily; it was not excessive or unusual in size; the wind was not more than a strong breeze, not approaching a gale; and there was no conceivable reason why the tow should have been along the easterly edge of the channel, but every reason to the contrary; since she was bound for the westerly side of the bay to the Kills, and all her witnesses state positively that she was not far from the middle of the channel, while the claimant's witnesses vary considerably in the position they give. I must hold, therefore, that there was plenty of room for the Mayumba to have gone on either side of the tow, as the libellant's witnesses testify.

The testimony of the Mayumba's own wit-

nesses is contradictory as to whether the Mayumba was in motion or not at the time of the collision. The libellant's witnesses say that she was. It appears certain, however, that she was at first designed to land near Red Hook, and had been headed toward it, then crossing the tow's course, as the latter's witnesses testify; but that on account of the strong wind a debate ensued between her captain, her pilot, and the pilot of the tug-boat Raymond, which went down to help her, as to the advisability of going in to Red Hook, and that that design was abandoned, and that it was determined to go to Wood ruff's stores, Brooklyn. This debate is stated to have lasted some 15 minutes, during which the Mayumba's speed was more or less checked. Some of her witnesses say that she was entirely stopped, and that while thus stopped the tow drifted down upon her. But whether her engines were stopped or not, I think she was equally at fault in getting and remaining in the way of the tow, when there was abundant room, as I find there was, on either side for her to have moved out of the way. The tow could not stop nor move much out of her course. The tug and tow were plainly visible several miles off; they were proceeding ahead at a moderate speed, and they did nothing to embarrass the Mayumba in keeping out of the way. If the latter was not bound under the rules to keep out of the way on account of her position, as alleged by the libelants, when near Robbins' reef, having the tow on her starboard hand, (which the Mayumba denies,) yet, from her perfect and easy command of her own motions, she was bound to keep away from the tow, when there was nothing to prevent her doing so. It clearly is no justification of her course to say that she steamed in front of the tug and tow, and then stopped until the latter drifted down upon her. It was her duty to exercise diligence in avoiding a collision, and I can see nothing to have prevented her easily doing so.

I cannot perceive any fault in the tug or tow, consequently the Mayumba must be held liable. The true cause of the collision, as well as of many of the inaccuracies in the testimony of the Mayumba's most important witnesses, was, doubtless, the fact that they were so much occupied in discussing whether they should go to Red Hook or to Brooklyn that they paid too little attention to the tug and tow to testify accurately concerning them, or to take timely measures to avoid them.

The libelants are entitled to decrees, with costs, and a reference to compute the amount of damages, if they are not agreed upon.

PORTCH-LELAND.

The United States Circuit Court, Chicago to which the Leland-Portch case was appealed from Judge Blodgett's decision, sustained Judge Blodgett. The suit grew out of a collision between the schooner E. M. Portch and the steambarge Leland near Sheboygan. The vessel was sunk, and her owner, Johnson, brought suit against the Leland to recover the value of the Portch, about \$10,000. He got judgment in the first trial of the case, and now the decision is affirmed.

THE NEW DISPATCH.

The new United States dispatch boat Dolphin arrived in New York from Chester, Pa., and anchored off the battery. She was then boarded by Lieutenant Dayton, who will be her executive officer, and Lieutenant McLean, who has been appointed her navigator. The Dolphin went up to Roach's yard at the foot of East Ninth street, where she will be completely fitted up preparatory to being turned over to the government. The Dolphin is a fine-looking vessel, and her proportions seem quite yacht like. She is built of steel and measures 1,500 tons. The vessel is 240 feet long and her breadth of beam is 32 feet. The hull is divided into six water-tight compartments. The spar deck extends the entire length of the ship, and both cabin and fore-cabin are below. The Dolphin is ramshaped at the bows. Her engines are compound and are very powerful, and she is steered by steam. The head and other lights are electric. The interior of the vessel has been finished in hard wood.

During her recent trip from Chester the Dolphin's machinery worked well, and she made fifteen knots with ease. The rig of the new dispatch boat is that of a three-masted schooner. She will carry one six-inch breech loading pivot gun and four Hotchkiss revolving cannon. Two of the cannon will be placed forward and the others aft. All will be in fixed armored towers. The pivot gun will be placed forward.

NAUTICAL NOTES.

Fifty tugs are in commission at Chicago.

The steamer Hiawatha went in the Union drydock at Buffalo, to have her bottom calked.

The Anchor Line barges Schuykill and Annie Sherwood have stripped and laid up Milwaukee.

Walter Howard was lost overboard off one of the Peshtigo Company's barges on Saturday morning, the 11th inst.

Up to October 15th, this season, the amount of ore shipped from Escanaba is 1,268,115 tons; pig iron, 3,515 tons.

Captain Chisholm, of the North Star, is suing for \$650 wages. The owners of the vessel claim that he overcharged expenses.

The barge Oneonta was seized last week by the United States marshal, on a claim of Thomas Adams and others for a \$290 tow bill.

The schooner J. G. Masten has arrived at Buffalo from Port Huron with her bulwarks stove in, the result of the heavy gale Wednesday night.

The propeller Russia arrived at Duluth three and one-half days out from Buffalo, said to be the fastest trip on record between the two ports.

The small steamer Olive, owned by Captain William Forde, of Sandusky, was destroyed by fire last week at South Toledo. She was valued at \$1,800.

The schooner Felicitous lost her jibboom recently by coming into collision with the steambarge Swallow at Wells street bridge. The Swallow got off without damage.

H. J. Pauley, owner of the schooner J. E. Bailey, ashore at Gill's pier, abandoned her to the insurance companies. She is insured for \$5,000 in the Greenwich and Exchange.

The schooner Plymouth, which is being rebuilt at Algonac, will not be completed this fall. Her owners, who are William Baker, D. Tozen and J. P. Harrow, intend to have her out the first thing next spring.

W. E. Lane, a sailor, died in the marine hospital, Chicago, after three years of suffering from heart trouble. He was in the hospital all that time, because his condition would not permit him to engage in any active employment.

The schooner Wilcox, with a cargo of iron ore, on her way to Cleveland last week, ran aground on Snake Island shoal and lay with her bow about a foot out of water. The tug Hiram A. Calvin went to her assistance and had her afloat in a few hours. She sustained no injury.

Over the Conneaut Lake they have a class of steamboat captains recruited from the adjacent farms. When the steamer Queen, rebuilt from a canal boat, comes up to the dock the captain cries out "Go up in the front there and throw out that rope at the high side."—*Buffalo Times*.

Captain R. F. Coffin, the genial yachtsman of the World, has recently published through Frunk & Wagnall's, a collection of sea stories, which are told in the captain's racy style. "Sailor Yarns" has a taste of salt water, which is charming to all lovers of the ocean, and will no doubt net the captain much profit and no small share of praise.

Eight boat captains have been engaged by Mr. Lambert, of Ottawa, to join the Nile expedition. They sailed from Montreal Sunday. Four of the eight are from this section of the country. Their names are: J. A. Williamson and T. A. Cummings, Greenville; W. M. Jones, of Ottawa, and James McKeever, of Prescott. The other four were from Winnipeg.—*Ogdensburg News*.

The propeller Douglass, in trying to get out of port at Saugatuck, stranded on the bar. The wind was strong from the west-southwest, and probably about twenty-five to thirty miles an hour. After throwing off 3,000 to 4,000 feet of lumber, she, with the aid of the tug Clara A. Elliott and the wind, which was in her favor, worked back into port. The wind had been strong all day, and a heavy sea running.

The steambarge T. W. Snook, which has recently been rebuilt, collided with the piles of State street bridge, when going down Chicago river last week, and crushed in her port bow badly. The tug Johnson was going through the draw of the bridge at the same time, and by trying to pass ahead of the steambarge, it is said, crowded her on to the piles and caused the accident. The Snook went to Miller Brothers shipyard for repairs.

A dispatch from Queenstown, October 14th, says the steamer Oregon, which sailed from New York simultaneously with the America on the morning of October 7th, was sighted off Browhead at 11:50 last night. The America arrived off Kinsale at 7 o'clock this morning. The time of her passage to that place was 6 days 16 hours and 14 minutes. The America slowed up two hours on account of heated machinery, and never sighted the Oregon again on the trip.

Duncan Duer is building a small steamboat at Ludington, Mich., intended for passenger and freight traffic between the points Sauble, Manistee, and Intermediate ports. She will be 85 feet long and will have a beam of 14 feet. A contract to build an engine with an 18x20 cylinder has been let to Milwaukee parties. The vessel will be com-

pleted at the opening of navigation next spring, and will take the place of the small boats which have in the past traversed this route.

The schooner A. J. Mowry, of Chicago, owned by C. Mears, went ashore near Hamlin, Mich., last week in a dense fog. She was being towed from Ludington by the tug Albion, for the purpose of getting a load of lumber at Hamlin, when both went ashore. Captain Caswell, of Ludington, went to their assistance with the tug Aldrich, and succeeded in getting the Albion off the beach the same night, and returned to Ludington for a longer hawser, and started out Monday morning to release the Mowry. The schooner lies on a sandy bottom, and being light, hopes are entertained that she will be got off without sustaining much damage. The Mowry is an old vessel, registering 188 tons, and was built in 1866. She hails from Chicago and is owned by C. Mears, who values her at about \$1,500. The underwriters have refused to take any risk on her since 1880. The tug Albion is owned by Pardee & Co., of Chicago, and is valued at \$3,500.

Applications for cancellation of insurance policies after November 1st, are pouring in to the insurance agencies, Chicago, every day, and the outlook is, that over one-half of the entire tonnage of Lake Michigan will go into winter quarters after that date. One vessel captain applied for a rebate. He said his vessel has been laid up for over five weeks, and her owners have concluded to lay her up permanently. The season has advanced so far that they deem it unwise to run any unnecessary risks in order to reap a medium or even a large profit when they can get a goodly amount in rebate on the insurance premium. The rebate for November is 20 per cent, and on large vessels it amounts to several hundred dollars. If freights improve next week some of these applications may be withdrawn, but a majority of them will probably remain in force until the time comes around for the rebate to come due. Vessel owners are confident that there will be no material improvement in grain freights, and certainly none in lumber freights. A good many insured lumber vessels will also be laid up after November 1st.—*In'er Ocean*.

NEW LIFE RAFT.

Since the life boats, life rafts, etc., used at present on steamers and sailing vessels do not present sufficient facilities for saving the lives of persons on the vessel in case of accident, Mr. John R. Adams, of Houston, Texas, has invented a life raft so constructed that it can be used as a state room ordinarily, and as a raft in case of danger. This life raft is provided with two oval end pieces, on the edges of which are placed staves held in position by heavy bands drawn together by nuts and bolts. On top is a platform surrounded by a railing. A ladder leads from the hollow shaft on the platform down to the floor of the raft. Between the floor and the shell are formed compartments in which water, food, and other necessities are placed. The raft is divided by a longitudinal central hallway, extending from end to end, and by transverse partitions forming a series of state rooms. Doors lead from the hallway into the state rooms and into a toilet room formed at one end. Access to the compartments beneath the floor is had by trap doors. In each state room are bunks, which are hinged to the side walls and provided with suitable means for holding them in place. At the end of the raft opposite the toilet room is a door opening to the hallway. The raft is held on deck by chains, and the state rooms are used, access being had through the end door, which, in case of danger, is closed and securely bolted, the entrance then being made through the shaft. In case the vessel sinks, the raft, being disconnected from the deck, is washed off and floats like a huge cask or barrel, and as it is closed on the sides and ends it can be thrown about by the waves without injury to the occupants. As all the state rooms on deck can be constructed in this manner, it is evident that a steamer can carry sufficient rafts for a large number of persons without wasting any room.—*Scientific American*.

OBITUARY.

Captain William T. Spencer, of the steamship Massachusetts, died Sunday night, the 12th inst. He had been ailing for nearly two years, and last year was obliged to retire from sailing in the middle of the season. At the opening of navigation this year he took charge of the Massachusetts. Two weeks ago he was again forced to retire from his boat on account of failing health, his place being taken by Captain Kelly, of the steambarge Monohansett. His death was sudden and unexpected. Captain Spencer was thirty-three years of age and had been on the lakes from boyhood, being well known at every lake port. For nine years he had been a master, first sailing the steambarge Ira Owen. Five years ago he bought the steambarge Minnesota, and remained in her until he bought out the Massachusetts in 1882. He was the commodore of the Inter Ocean Transportation Line for five years, having charge of all the boats. He lived in Chicago until two years ago, when he married and moved to Milwaukee. His body was forwarded to Milwaukee and the funeral was held Tuesday afternoon.

A NOVEL DRYDOCK.

A new and novel form of floating drydock is now being constructed at Grays, Essex, England, for the Dumbfries Drydock, Shipbuilding and Engineering Company, of Cardiff. The dock is in two parts, each of which can be worked independently, the larger part being capable of docking a vessel of 2,500 tons, and the smaller a vessel of 2,000 tons; the two united are capable of docking a vessel of 4,500 tons dead weight, and 500 feet or more in length. In end elevation the dock has the general appearance of a very large landing stage, and could well be used as such, when found convenient to do so. It resembles the letter L, the upright side of which is attached by eleven pairs of parallel motion booms to vertical girders built into the sea wall; the lower ends are embedded in concrete; and at the ground level these girders are secured by a horizontal anchorage. This connection insures that the dock shall be horizontal throughout the whole range of the tide, which is here about forty-two feet. Ample accommodation is provided for communicating with the shore by means of seven principal gangways, passing through passages in the side of the dock to the pontoon; these are hinged at their upper ends on the shore, and are furnished with rollers at their lower ends on the dock, so that they accommodate themselves to its rise and fall. There are also gangways on some of the upper booms, giving additional access to the upper deck. The deck having been lowered by allowing water to enter the bottom, or pontoon, a vessel is brought over the keel blocks and rapidly centered by the mechanical centering shores, shown as passing through the side of the dock; the pumps are then set to work till the vessel has a good bearing on the keel blocks, when additional blocks are brought up to thoroughly support the bilges, so that the vessel is firmly secured. Pumping is then resumed and the water ejected from the pontoon until the vessel is raised completely out of the water, when the operation of lifting is completed. The pumps are of sufficient capacity to enable the largest vessel to be docked within an hour, and not more than half an hour would be occupied by lowering her into the water. The advantage of this unusual rapidity will be very great, as it will enable a vessel to be docked, sighted and again floated and be taken to her loading berth in wet docks within one tide. The dock is divided, both longitudinally and transversely into a large number of watertight compartments, each of which may be pumped or shut off independently. The sluice valves are arranged and grouped in such a manner that they afford the most perfect control. They are provided with gear for automatically opening and shutting them, and also with manual gear which can be worked either independently of the automatic gear, or in conjunction with it. The automatic gear is arranged as follows: On the upper end of the vertical columns or girders an A-shaped frame is pivoted in gudgeons at the upper end, and at a certain distance below that point the shore end of the upper boom is connected to it by a steel pin, so that the A-frame can rotate freely on the gudgeons, through a certain angle in either direction. From each leg of the A-frame is suspended a heavy weight. To the apex of the frame, above the gudgeons, is attached the rod connecting with the valve-lifting gear on the dock.

When it is required to lower the dock the whole of the interior valves are opened ready to admit water to the various compartments, the outer sluice valves are then raised, and the dock commences to lower. Should the outer side of the pontoon fill slightly faster than the shore side, and so have a tendency to list the dock in that direction, a pull is exerted upon the upper boom, causing the A-frame to be turned on its gudgeons, and the right hand weight to be lifted. A very slight traverse of the A-frame causes the rod above to actuate the valve gear, so that the valves admitting water on the outer side of the pontoon are closed, while those on the shore side of the pontoon remain open. The dock is thus almost immediately brought back to a dead level, and the valves which have been previously closed are again automatically opened. A similar operation by the same gear controls the dock in the event of a tendency to list toward the shore.

There will be two centrifugal pumps in each part of the dock; they will be driven by powerful horizontal engines placed in the upper chambers of the vertical side of the dock. Whatever may be the level of the dock, steam is always in connection with the engines from the workshop boilers on shore, thus economizing weight and space in the dock. The dock will be furnished with several vertical spring booms, along the side, and against these the vessel might be brought up without any shock when coming alongside. The side shores, passing through the side of the dock, are worked by hand from the top deck by means of a worm and wheel gear. The extreme shores are used for bringing the vessel centrally over the keel blocks while she is still afloat, and the remainder are brought into position during the operation of lifting. The bilge blocks consist of a very strong timber framework, and allow of a certain amount of spring, so as to give the vessel a secure seating. These are worked from the top deck by means of similar gear to that employed for the side shores, and they can readily adjust themselves to accommodate vessels of any shape. Rails are laid along the whole length of the

top deck, so that a steam crane can travel from end to end. Four gangway landers provide communication from the pontoon to the top deck, and also to the three painting stages which run from end to end. Every part of the dock will be able to be got at for cleaning and painting whenever required, as one part can readily be docked on the other part.

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A Full Line of Vessel Supplies,
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OPEN DAY AND NIGHT.
TELEPHONE NO. 1540.

\$25 Reward.

I will give the above reward for information of the vessel that run into my dock at Grosse Isle, Detroit river, on the night of July 26, 1884.
GEORGE W. ALEXANDER.
Detroit, Mich., October 7.



FOR SALE,
AT
THE GLOBE IRON WORKS.

SECOND HAND TUBULAR BOILER, 44 inches diameter, 43 tubes 3 inches diameter and 12 feet long, steam drum 30 inches diameter, 40 inches high; froth grates, fittings and breechings; good order.

SECOND HAND MARINE BOILER, in good order; Shell 17-16 inch iron plate; diameter, 9 feet 6 inches; length, 18 feet; 129 tubes 4 inches in diameter, 11 feet 4 inches long, three flues 18 inches diameter; two flues 16 inches diameter, two flues 10-12 inches diameter; fire box, 6 feet long, 4 feet high; steam chimney, 7 feet high.

SECOND HAND MARINE BOILER four feet wide, 6-1-2 feet long, 5 feet high, sixty-four 2-1-2 inch tubes 60 inches long, cast iron breeching, good as new.

SECOND HAND MARINE ENGINE, double direct-acting 8x8 inch cylinder, shaft and wheel for yacht or tug; good as new.

For Sale or Exchange,
Tug Annie Robertson.

Her length over all is 51 feet, breadth 18 feet and depth of hold 6 feet; draws 5 1/2 feet of water; measures 924-100 (new) tons, and 18 24-100 old. Built in 1880 and rebuilt this spring, new deck frames and cabin, and machinery thoroughly overhauled. Engine is 14x14, boiler 8 1/2 feet long and 4-8-12 in diameter and allowed 95 pounds of steam. Warranted in No. 1 condition and subject to inspection. Price, \$3,300 cash. Inquire at MARINE RECORD OFFICE.

FOR SALE.

Quarter Interest in the large Tug Samson.

One of the most powerful tugs on the lakes. She was built at St. Catharines by Shickluna, rebuilt in 1881 and measures 181 (new) tonnage. She is straight A2, with insurance valuation of \$15,000, and can be insured for \$19,000. Will sell quarter for \$3,400; part cash, balance on easy terms. Address MARINE RECORD.

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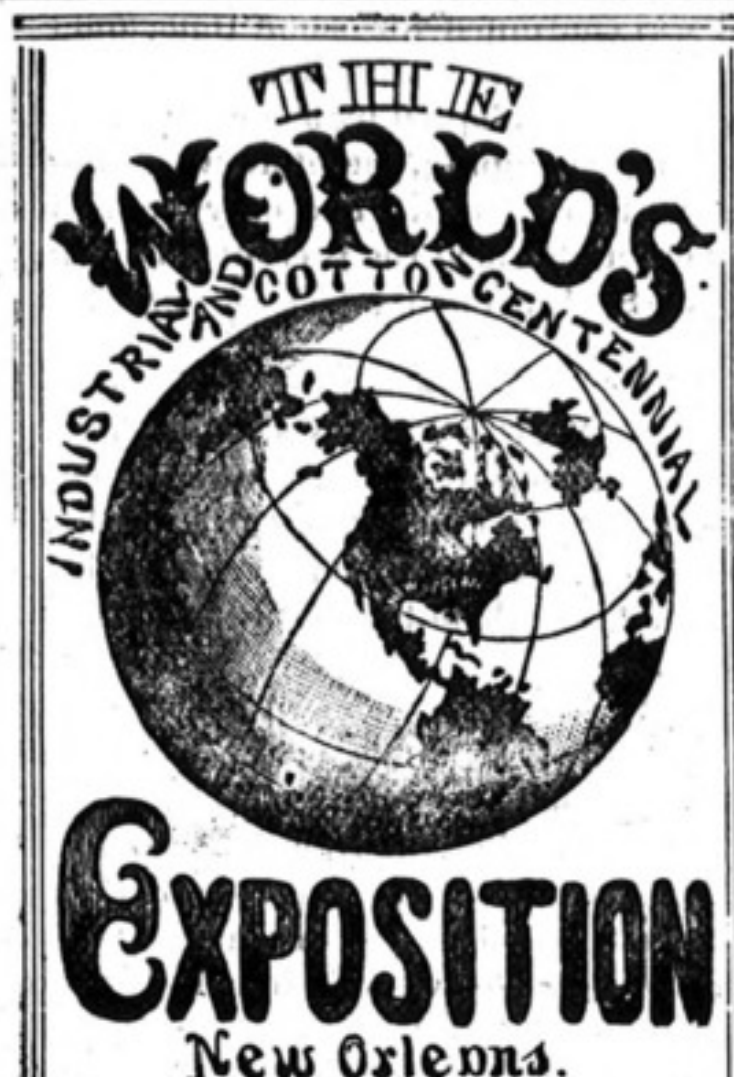
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Her length is 135 feet, beam 26 feet, and hold 10 feet 10 inches. Boiler 17 feet long, 7 feet diameter; three flues, two 16 inch and one 17-inch. Engine 22x42. Carries 240,000 feet of lumber. Speed, 11 miles light, and 9 1-2 loaded. Insurance valuation, \$15,800. Address MARINE RECORD Office, No. 144 Superior street, Cleveland, O.

FOR SALE,
A Fine Harbor Tug.

Dimensions of hull 65 feet over all, 16 feet beam, 8 feet hold, and measures 46 tons with 7 feet draft; can be made 6 feet draft. The engine, 18x20, is in first-class condition, with all new brasses, new rings in cylinder and turns a six-foot wheel, which was new last season. The boiler is one year old, is large enough to burn wood or coal and is allowed 100 pounds of steam. Price \$8,500, and must be sold inside of thirty days. Address MARINE RECORD OFFICE.



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TRAVELERS' REGISTER.

LAKE SHORE & MICHIGAN SOUTHERN.

Commencing Sunday, May 11, 1884, at 12 o'clock noon the time given in the figures below is the new standard (Ninetieth meridian) time, which is thirty-three minutes slower than Cleveland time proper:

Eastward.	Arrive	Depart.
No 4, Fast Limited Express.....	11 10 A M	12 05 A M
No 8, N. Y. & A. Express.....	6 35 A M	7 00 A M
No 26, Elyria Accommodation.....	8 05 A M	8 50 A M
No 35, Buffalo Ac' m via Sandusky.....	10 35 A M	11 50 A M
No 12, N. Y. & B. Express.....	11 55 P M	12 25 P M
No 14, Special N. Y. & Bos Express.....	9 40 P M	10 00 P M
No 22, Night Ex via Sandusky.....	12 42 P M	1 10 A M
No 26, Conneut Accommodation.....	14 25 P M	
Westward.	Arrive	Depart.
No 1, Fast Limited Express.....	11 55 A M	12 05 A M
No 23, Mich Express via Sandusky.....	12 15 A M	12 35 A M
No 3, Chicago Express via ".....	26 05 A M	6 30 A M
No 25, Mich Accom Norwalk.....	10 10 A M	11 10 A M
No 21, Toledo Ex via Norwalk.....	12 55 P M	1 30 P M
No 5, St. Louis Ex via Sandusky.....	12 15 P M	12 40 P M
No 9, Chi P. Ex via Norwalk.....	6 06 P M	6 30 P M
No 31, Elyria ac to Elyria only.....	14 30 P M	
No 27, Conneut Accommodation.....	18 10 A M	

Sunday train for Nottingham—Depart 8:30 a. m. and 1:45 p. m.; returning, leave Nottingham at 9:05 a. m. and 3:45 p. m.

Reference marks—* Daily, † daily, except Sunday, ‡ daily, except Monday.

For full information as to trains and connections apply at the new city ticket office, corner Seneca and St. Clair streets, Lake Shore block.

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NEW YORK, CHICAGO & ST. LOUIS RAILWAY.

The passenger equipment of this New Trunk Line is all new and is supplied with the latest appliances necessary to safe speed and comfortable travel.

Trains leave and arrive at the Union Depot, Van Buren street, Chicago, and N. Y. L. E. & W. R. Y. depot at Buffalo.

Following is the time in effect Oct. 6, 1884, and until further notice:

GOING EAST.	LV.	AR.	GOING WEST.
A. M.			P. M.
7 50	Chicago.....	7 50	
9 45	Valparaiso.....	5 42	
P. M.			
1 50	Fort Wayne.....	1 50	
2 05	New Haven.....	1 55	
A. M.			A. M.
3 56	Lelapsic.....	11 50	
4 49	Arcaida.....	10 34	
A. M.			P. M.
6 50	Fosteria.....	10 22	8 50
7 35	Green Springs.....	9 44	8 05
8 15	Bellevue.....	9 10	7 35
10 49	Ar.....Cleveland.....Lv.	6 45	5 01
P. M.			
12 05	Palmsville.....	3 44	
12 58	Ashtabula.....	2 51	
1 42	Conneaut.....	2 20	
2 41	Erie.....	1 23	
A. M.			A. M.
4 19	Dunkirk.....	11 24	
5 55	AR.....Buffalo.....Lv.	9 50	

Through tickets to all points are on sale at principal offices of the company at LOWEST RATES for any class of tickets desired. Baggage checked to destination. For information, call on nearest agent of the Company, or address

B. F. HORNER,
Gen'l Passenger Agent,
LEWIS WILLIAMS,
General Manager, Cleveland, O.

BEE LINE

CLEVELAND, COLUMBUS, CINCINNATI & INDIANAPOLIS.

Commencing Sunday, June 8, 1884, trains of the Bee Line—Cleveland, Columbus, Cincinnati & Indianapolis Railway—will leave and arrive at Cleveland as follows, CENTRAL STANDARD TIME, 33 minutes slower than Cleveland time:

No.	Depart.
No. 3, Columbus, Cincinnati & Ind. Ex.....	7:00 A M
No. 23, Gallon & Wheeling Express.....	6:40 A M
No. 9, Col. Cin. Ind. & St. Louis Ex.....	6:40 P M
No. 5, Col. Cin. Ind. & St. Louis Express.....	12:35 P M
No. 27, Gallon & C. L. & W. Ace.....	4:00 P M
No. 29, Massillon & Ulrichsville Ex.....	5:00 P M
Arrive.	
No. 8, Col. Cin. Ind. & St. Louis Ex.....	6:40 A M
No. 20, Ulrichsville & Massillon Ex.....	9:00 A M
No. 2, Col. Cin. & Indianapolis Express.....	9:50 P M
No. 14, St. Louis, Ind. Cin. & Col. Ex.....	9:45 P M
No. 22, Gallon Acc.....	10:00 A M
No. 26, Wheeling Accom.....	4:30 P M
No. 4, Col. Cin. & N. Y. Express.....	1:15 A M

Trains marked * daily, all other trains daily except Sunday.

E. B. THOMAS, General Manager.
O. B. SKINNER, Traffic Manager.
A. J. SMITH, General Passenger Agent.
CLEVELAND, OHIO.

New York, Pennsylvania & Ohio R. R.

NEW YORK, BOSTON AND THE EAST.

The Shortest and Quickest Route to Pittsburgh, Washington and Baltimore and the Southeast.

Central or Ninetieth Meridian time, 33 minutes slower than Cleveland city time.

Until further notice trains will leave from the new Central Depot, South Water street and Viaduct as follows:

6:50 a. m. ATLANTIC EXPRESS—(Daily) Pullman sleeping and hotel coaches from Leavittsburg 8:35 a. m. to New York, Albany and Boston without change. Arrive at Meadville at 10:40 a. m. (dinner) Franklin at 12:08 p. m., Oil City 12:30 p. m., Corry 12:55 p. m., Jamestown (Lake Chautauque) 1:35 p. m., Buffalo 5:50 p. m., Rochester 8:20 p. m.; Hornellsville 6:00 p. m. (supper); Corning 7:25 p. m., Elmira 8:05 p. m., Binghamton 10:05 p. m., Albany 5:00 a. m. Boston 1:45 p. m.; arriving at New York 6:15 a. m.

2:20 p. m. LIMITED EXPRESS—Through Pullman sleeping coach from Cleveland to New York. Arrives at Meadville at 6:30 p. m., Jamestown 8:47 p. m., Salamanca 9:45 p. m., New York 10:10 a. m.

11:00 p. m. NIGHT EXPRESS—(Daily except Sunday) Sleeping coach from Cleveland Hornellsville. Arrive at Youngstown at 1:50 a. m., Meadville 3:25 a. m., Corry 4:55 a. m., Jamestown 5:57 a. m., Buffalo 9:20 a. m., Rochester 12:58 p. m., Hornellsville, 11:00 a. m., Corning 12:07 p. m., Elmira 12:40 p. m., Binghamton 2:19 p. m., New York 9:10 p. m. Arrive at Pittsburgh 5:50 a. m. without change.

2:20 p. m. PITTSBURGH EXPRESS—Daily—Through without change. Parlor car attached. Arrives at Youngstown 5:00 p. m., Pittsburgh 8:02 p. m., Washington 7:09 a. m., Baltimore 8:19 a. m.

4:11 p. m. MAHONING ACCOMMODATION—Arriving at Youngstown 6:55 p. m., Sharon 8:01 p. m., Sharpesville 8:10 p. m.

6:50 a. m. PITTSBURGH EXPRESS—Daily—Through without change. Arrives at Youngstown 9:30 a. m., Sharon 10:30 a. m., Sharpesville 10:40 a. m., Pittsburgh 12:45 p. m. Returning, leaves Pittsburgh at 4:15 a. m., 7:45 a. m., 12:55 p. m., and 3:45 p. m.

10:35 a. m. YOUNGSTOWN AND PITTSBURGH ACCOMMODATION—Stopping at all Way stations, arriving at Youngstown 1:40 p. m., Pittsburgh 5:45 p. m.

Trains arrive at Cleveland, 6:15 a. m., 6:30 p. m., 10:20 a. m.; 1:05 p. m., and 9:45 p. m.

This is the only route by which passengers can reach Corry, Elmira, Binghamton, New York City and intermediate points without change. No change to Boston and New England Cities.

Baggage checked through to all points East.

Through tickets and information regarding the route can be obtained at the office 131 Bank street, and at n. w. Depot of N. Y., P. & O. R. R., South Water street and Viaduct, Cleveland, O.

A. E. CLARK, Gen'l Pass'r Ag't Cleveland, O.
J. M. FERRIS, Gen'l Man'gr, Cleveland, O.
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\$66 a week at home. \$5.00 outfit free. Pay absolutely sure. No risk. Capital not required. Reader, if you want business at which persons of either sex, young or old, can make great pay all the time they work, with absolute certainty, write for particulars to H. HALLET & Co., Portland, Maine.

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CLEVELAND, OHIO, THURSDAY, OCTOBER 23.

THE PRIME MERIDIAN.

The fact that the action of the Meridian Conference, in its session at Washington, is a most important matter to navigation, lake as well as ocean, is well known and has attracted much attention from this interest. Among lake marine men it resolved itself into a question whether we are to sail hereafter by the charts which are in general use by seventy per cent of all the shipping afloat, or adopt a new one, based on sentiment, patriotism or neutrality. It seems that the conference at its first meeting, October 1st, was not of positive mind whether the representatives had come together for the purpose of simply recommending or of fixing without appeal upon a standard or universal meridian, which question was finally settled after four days adjournment by quoting the call for the conference, in which the President of the United States was empowered to "extend to all nations an invitation to appoint delegates for the purpose of fixing upon a meridian," which satisfied the meeting that the action taken by it would be considered as final, and that sentiment and the question of neutrality must give way to the more practical and economical views. Mr. Rutherford, an American representative, in order to give direction and precision to the work, then submitted a resolution that the conference propose to the governments represented the adoption, as a standard meridian, that of Greenwich, passing through the centre of the transit instrument at the observatory at Greenwich. The French delegates made extended remarks opposing such a direct resolution, stating that this conference had no authority definitely to adopt any meridian; that it should not be influenced by the decisions of the geodetic conference last year at Rome, since that was purely a meeting of scientific men on a technical matter, while this conference was more international in its character, and should examine the thing from a political standpoint, Mr. Janssen even going so far as to express the opinion that it should confine its deliberations to the question as to whether a common zero meridian were desirable. General Strachey, representative for Great Britain, following, said that the conference at Rome had concluded that a prime meridian must pass through an observatory of the first order, and only those of Paris, Greenwich, Berlin and Washington would fulfill this condition, whereupon Commodore Sampson, an American, summarized the many necessary and desirable points in a prime meridian, saying that as seventy per cent of all the shipping afloat used the Greenwich meridian, and that the cost of the plates, now engraved for charts reckoning from Greenwich, was seventy-five

per cent of all the world's charts, it would involve an outlay of ten million dollars to make a change from the Greenwich longitude, and advocated the adoption of a resolution to the effect that the Greenwich meridian be made prime, which was carried after much discussion. Mr. Rutherford then introduced a resolution to count longitude in two directions from Greenwich up to 180°, east longitude being plus, and west minus. This was favored by the delegates from Great Britain and Russia, and opposed by Commander Sampson, the latter advocating the plan of counting only in one direction, from 0° to 360°, as simpler. This plan was also favored by the delegate from Sweden, Count Lewenhaupt, who moved to adopt the fourth resolution of the Roman conference, counting longitude continuously through the whole 360°. Discussion on this point was continued for some time, and on being brought to a vote Mr. Rutherford's resolution was adopted by a small majority. The world's shipping, therefore, will sail by Great Britain's chart. The only countries using other charts at the present time being France, Spain, Portugal, Italy and Denmark.

THE KEY TO LAKE NAVIGATION.

It is to be hoped that the new batch of politicians who go up to the legislative halls at Washington this fall will consider it incumbent upon them to advance, somewhat the interests of lake commerce by making it possible to get to the seaboard the enormous crop of grain of all kinds, or the great output of ore which should find the natural way over the lakes, to New York or Montreal, and thence to the English market at the lowest possible cost of transportation. In order to do this without detriment to our lake shipping interests, which have attained a magnitude unequalled by our ocean commerce, it will be necessary to improve and deepen our canals and rivers, sufficiently to permit passage, unlighted, to the large class of propellers that are now being put afloat on the lakes. Heretofore, shipbuilders have been compelled to conform to the draft permitted to pass Sault Ste Marie the Lime Kilns or Welland canal in laying down their ships, although the evident economy of the interest suggests that ships of greater tonnage should be built. It is true, that some work is being done for the improvement of our facilities, but very much is being neglected. For instance, in the approach to the guard gate at the Sault Ste Marie canal propellers drawing not over 14½ to 15 feet have struck ridges or humps, left, apparently, to protect the sills at the gates, which prevents large propellers from loading within one foot as deep as last season. This condition could be corrected with very little expense. As long as the Sault Ste. Marie canal and the Lime Kilns remain in the present low water condition they are the keys to the commerce of the lakes and the admirable policy of the Canadian government to deepen the Welland canal would avail nothing, or as the American Grain Trade and Elevator of Chicago wisely puts it:

"The full appreciation on the part of the Dominion Government of the value of the lake navigation and its easy and cheap conveyance of products to the East and the seaboard, is shown by their large and continued expensive operations in improving their canals and waterways. That nation of less than 5,000,000 inhabitants should put to the blush the slow, inefficient action of the politicians we send to Congress, who require too much time to look after their respective political affairs to give due attention to these great public commercial interests. The niggardliness of congressional appropriations to the long and greatly needed improvements at Sault Ste. Marie, as well as at other points in our lake waterway transportation facilities, are in point; the value of the traffic of our great lakes alone has been pronounced by U. S. Commissioners to be greater than that of our entire foreign commerce. Is there no method by which statesmen, in place of mere politicians, can be gotten into our legislative halls? The American interests in the grain as well as the other heavy traffic of Oswego, Ogdensburg, Lake Champlain, and a large associated section of the Eastern states, combine with those of the Dominion in their demand for the Welland improvement as an outlet into Lake Ontario for the trade of the West and its

home distribution, which is now carried by the Erie route. Eastern railway officials have repeatedly said that if the St. Lawrence and Welland system were deepened to a standard of twenty feet, it would command the trade of the lakes. The limits set by the U. S. Government to this depth in its decision as to the Sault Ste. Marie canal and river, and the Lime Kiln Crossing, is sixteen feet. This will therefore be the base of the efforts of the Canadian improvements at present."

It is the duty, therefore, of our representatives, especially those from the lake districts, to see that the necessary funds are forthcoming for the immediate improvement of our system of lake navigation in order that full benefit may be derived from the excellent transportation facilities with which this section of the country has been endowed.

NATIONAL BOARD OF STEAM NAVIGATION.

This board, composed principally of ocean and river vessel owners, held its 13th annual meeting in New York city last week and closed its session on the 16th. It is to be supposed, if we may judge from the reports at hand, not having been favored with a copy of the proceedings, that this session of the board has advocated a change of policy in the course to be pursued, and if the board has not yet done anything in the interest of steam navigation it is the intention to do something now; that is, a more aggressive policy will be adopted, and all men in the interest will be asked to assist in forcing the necessary measures to a successful issue. The following, which seems to be one of the most important works before the board, was adopted.

Resolved. That the Mississippi River Commission be and is earnestly and respectfully requested to mature and put into operation such plans as in their judgment will restore and permanently maintain the navigation of the old river, to the end that the volume of water from the Red river now deepening and widening at Atchafalaya, may be forced into the Mississippi river.

Generals J. B. Hamilton and James A. Dument were thanked for aid in procuring a reduction of inspection fees on steam vessels, and the abolition of the hospital tax on sailors. The action of the New York and Philadelphia association in this matter was indorsed. The following officers were elected for the ensuing year and installed: President, J. L. Fisher, New York; Vice Presidents, B. D. Howard, New Orleans, and William P. Clyde, Philadelphia; Secretary, G. W. Bryant, New Orleans; Treasurer, Addison Lysle, Pittsburg; Executive Committee—General James S. Negley, Pittsburg; H. C. Haarslick, St. Louis; R. Lynot, New Orleans; T. C. Hersey, Portland, Me., and F. W. Vosburgh, New York; D. M. Munger and F. A. Churchman, Philadelphia. The convention adjourned until the second Tuesday in September, 1885.

The new shipping bill having gone into force, there is much uncertainty on the part of aliens as to the necessary means to be taken to become citizens of the United States. For their benefit we quote Revised Statutes of the United States; 2d edition, section 2,174, as follows: "Every seaman, being a foreigner, who declares his intention of becoming a citizen of the United States in any competent court, and shall have served three years on board of a merchant vessel of the United States, subsequent to the date of such declaration may, on his application to any competent court, and the production of his certificate of discharge and good conduct during that time, together with the certificate of his declaration of intention to become a citizen, be admitted a citizen of the United States; and every seaman, being a foreigner, shall, after his declaration of intention to become a citizen of the United States, and after he shall have served such three years, be deemed a citizen of the United States for the purpose of manning and serving on board any merchant vessel of the United States, anything to the contrary in any act of Congress, notwithstanding; but such seaman shall, for all purposes of protection as an American citizen, be deemed such, after the filing of his declaration of intention to become such citizen."

The master of the schooner Our Son received orders yesterday from the owner, Valentine Fries, to lay her up after she had discharged her cargo of ore at Ashtabula, where she now is.

NAVAL ARCHITECTURE.

Editor of the Marine Record.

Mr. P. D. Wilson, constructor in the United States navy, after informing us of the successful application of philosophical knowledge and the exact sciences to the mechanical arts, and of the rapid development of new resources in all directions, says: "In the art of naval construction, there seems to be no less advance than in any other, which is due principally to the growth of enlightened ideas, and the successful application of abstract science," and that, "At the present day nothing will compensate the naval architect for the want of a sound and accurate knowledge of mechanics."

In the naval schools of England and France, the curriculum preparatory to the study of naval architecture, comprises a full course of mathematics, analytical mechanics, nautical astronomy, and marine engineering, together with some other branches. In those countries, too, those interested in ships, have availed themselves of the labors of such scientists as the Astronomer Royal, G. B. Airy, Poisson, Archibald Smith, the Rev. Dr. Starnsby, and others, to point out the cause of the apparently erratic deviations of the magnetic needle, and to advise the builders how these deviations may be reduced to a minimum. Yet Mr. Norcross tells us there is no such science as "naval architecture," that "known science had nothing more to do with naval architecture than it had with astrology," that shipbuilders are merely "experts," and that shipbuilding is merely a "craft." What a pity that such men as Wilson, Froude, Rankine, Russell, and many others of their class, could not have known the above facts. The great labors of these men for the benefit of mankind have, in the opinion of Mr. Norcross, amounted to nothing—for the simple reason that the science which they have applied was not the "known science."

In your issue of the 16th, "Helix" refers to some "extraordinary statements" made by "Chip" concerning propeller wheels, and asks further information. If Helix will be more explicit, and specify particularly those points requiring further illustration Chip will take pleasure in doing the best he can in that direction. CHIP.

[Continued from 1st Page]

The schooner James Mowatt, Captain Crane, recently built by Wolf & Davidson, Milwaukee, made the run from this port to Collingwood in sixty hours. This is claimed to be the fastest time on record.

At Miller Brother's drydock the schooner E. J. McVea was in for some new plank in her bottom and calking, the schooner Arctic to have a leak stopped, the steambarge Tempest had her shoe fixed, the schooner Lotus got a new jibboom, the schooner Floretta is getting a new stern.

Vessel business is almost at a stand still at this port. A large number of sail vessels of all sizes are already stripped, and very many are laying in ordinary. Some of them have been doing so for nearly two months, waiting for the good time when freights would improve, but all to no purpose, as they have continued getting worse all along. The shipyards are employing only about one-fourth the number of men that they were at this time last season. A large number of vessel captains, who have laid up their vessels at this and other ports, and others who are waiting for charters, are seen around daily in groups, talking of the miserable times now existing, and the poor Jack tars, who have many of them been for several weeks around the shipping office waiting for a sight, curse their hard fate and talk of the winter which is fast approaching, which they will have to battle through without having had a chance to make provision for it, many of them, even now, being at a loss to know how to obtain their next meal and night's lodging.

The Phoenix Insurance Company on Tuesday paid Coon & Knowles \$9,789 for the cargo of corn lost on the schooner Arabia recently. Proof of the loss was filed October 10th.

Captain Thomas Clark, of the schooner Mowry desires to publicly thank the Big Point Sable crew for services rendered in assisting that vessel while she was on the beach at Hamlin. T. W.

DETROIT.

Special to the Marine Record.

October 21—The propeller James Flske narrowly escaped total destruction by fire on Friday last, while lying here at A. Cheesebrough's dock. The Flske arrived at her landing at about midday, and after a rest of two hours, was preparing to proceed on to Buffalo when a man from the firehold rushed upon deck and gave the alarm of fire. In a moment flames ascended up through the engine rooms, driving the crew from a position to accomplish anything with the pony or hand engines, and for a brief time consternation reigned supreme. The city fire department were notified and were prompt to the call, and with the united forces of crew and shore help the flames were subdued and the vessel saved from total destruction. Her cargo of oats did not suffer material damages, but to the vessel it will not be less than \$8,000, all things taken into consideration, although the estimates were placed much below that, which is invariably the rule. The disaster caused the steamer a delay of twenty-four hours, when she proceeded on her voyage.

For the past few days Indian summer has prevailed in nearly all the lake region and, although interspersed with fresh gales, which is an usual accompaniment, the results thus far have not been as severe as in many seasons of the past. It has, however, caused much delay to the shipping, and will prove a serious drawback, now that freights are somewhat improving. At nearly all lake ports vessels have been retarded in their movements from twenty-four to forty-eight hours at a stretch, and this must be placed on the wrong side of the ledger.

The present season has been more than usually prolific with steamers getting disabled in their machinery, and no matter how trivial those accidents may appear in the papers, they figure largely in the way of repairs. A steamer is reported as merely breaking a crank pin, which, to the general reader, does not appear to be of much account, yet the loss or damages not unfrequently run up from \$500 to \$1,000 and sometimes even beyond that, when everything is taken into account. The propeller Toledo, while out on Lake Huron, was picked up by the steamer Arizona on Thursday, the former having broken her air pump, and the result was a week's delay for repairs. And so I might go on in the matter of such losses, from one to the other, and the result would, to many, be marvelous. Since the month of October set in the arrival here of disabled craft, has been almost daily, much of which is hardly ever noticed or known of by the papers.

The tug International, of Murphy Brothers' line, left here Sunday to go to the relief of the propeller Georgian, which struck a rock a few days since and sunk in Georgian Bay. This steamer has been exceedingly unfortunate this season, her first accident occurring in the spring on Lake Superior, which involved a total outlay of \$20,000, and the same steamer which went to her relief on that occasion is at the fore in this instance.

The schooner Jura, a Canadian craft, arrived here on Saturday, with wood from Lake Erie, in a somewhat crippled condition. While off Rond Eau she was struck by a squall, carrying away canvas and other outfit.

The new steamship Syracuse, just completed at this port, was out on her trial trip on Friday, and again on Saturday. In the first instance some trivial affair took place in the working of her machinery, and she came back to repair the difficulty. On a repetition of the trial Saturday, everything was found to be in complete working order, and, although flying light and her wheel half out of water, she made her fourteen miles per hour with comparative ease, and it is not going too far to say that with good ballast she would accomplish fifteen miles per hour, in short, a rival for the Jewett or any other of the screw order. To-day she is taking on a cargo of grain for Buffalo and will proceed to that port to-morrow.

The steamship Onoko has not yet put in her appearance here to load for Buffalo, as was promised in my last communication, but it is stated will be on hand after her present engagement.

A novel incident is reported from Marquette, Lake Superior, which is without a precedent in lake history. The schooner

S. P. Ely was lying at that port, moored at the dock with all sails set and the crew on shore, even to the cook. She was struck by a puff of wind, parted her lines and proceeded lakeward. A tug was sent in pursuit, and after a chase of several miles the recreant craft was overtaken and brought back. She was laden with hay and camp supplies and narrowly escaped going down.

The schooner E. G. Benedict was seized yesterday by the United States marshal at this port for a claim amounting to \$1,752.50, in favor of the tug Admiral Porter, which went to her relief early in the season, while wrecked in Georgian Bay. In due process of time she will be sold, when the purchaser, whoever he may be, will receive a clear title.

The barges Dacotah and Johnson, which suffered damages in the storm a few days since on Lake Huron, are here for repairs, which will amount in the aggregate from \$800 to \$1,000.

The steambarge Victoria, owned at this port, while en route from Kittle Point, Lake Huron, struck a rock off that place and sunk. Last evening the tug Admiral Porter was dispatched to her relief and, if possible, will get her into port. She is laden with lumber for Windsor.

Charles Chamberlain, of this city, owner of the scow Louisa, was advised last evening of her total loss at Manistique, Lake Michigan. She was laden with brick, and while entering that port, struck the pier and broke in two. She was insured for \$2,000 and valued at \$3,500. She had been sixteen years in service and was 190 tons burden.

The outlook for freight does not improve. The rate on wheat from here to Buffalo is still 1 3/4 c, but there is no red wheat in the elevators. The Syracuse, which has been loading wheat at this port is unable to procure a whole cargo, having only 48,000 bushels while she carries 80,000 bushels. She will, however, make up for the deficiency by taking some copper from the copper works at this port, and will leave for Buffalo.

The revenue steamer Fessenden has just returned to port from a cruise to the Straits. The remainder of the season she will be employed looking after wrecks.

The scow Arizona arrived here on Saturday in bad condition, having been severely handled in the late gale, Sunday, on Lake Huron, and it is now stated that she will be sold for the payment of various debts.

J. W. H.

ESCANABA.

Special to the Marine Record.

The propeller Raleigh, while coming through the Door Saturday night, struck Pilot Island Reef and lost her rudder, broke her stern post and bent her shoe. The wind was southeast, and she drifted through the Door into Green Bay and was picked up by the tug Bruce of Ford River and brought to Escanaba. She will leave for Manitowoc to be docked as soon as the wind lulls.

PORT COLBORNE.

The schooner King Sisters, laden with wheat and bound from Duluth to Kingston, is ashore on Mohawk Reef about fifteen miles west of here. She went on about 8 o'clock Monday afternoon. The vessel is lying on rock bottom in bad shape and full of water. The wind was blowing a gale from the southwest and the vessel was making about twelve miles an hour when she went on. A strong wind is still blowing and a heavy sea is breaking over her. She will probably be a total loss. The crew Sisters got ashore all safe. The King was built by Rogers of Toledo, in 1862 and rebuilt in 1870. Her registered tonnage was two hundred and sixty-eight, and she is owned by Krauss & Co. of Cleveland and sailed by Captain F. S. Brady. She is insured for \$6,000 in the Continental. A tug and wrecking outfit will go from here to her assistance as soon as the weather moderates. She has been abandoned to the insurance company.

LORAIN.

A serious accident happened Tuesday afternoon. The tug Selah Chamberlain went out to take the schooner Thomas Gawn from the tug Gladiator, and Samuel Wallace, the fireman on the Chamberlain, got his leg caught, and before he could be released the line had cut his right leg off just below the knee. Wallace is a brother-in-law of Captain J. F. Bowen, and has been fireman on the Chamberlain about one month. He is a single man twenty-two years old.

BUFFALO.

Dimick & Brother were advised to-day that the schooner King Sisters had gone ashore at Mohawk Island about thirty-six miles above here, on the Canadian shore. The vessel is loaded with wheat from Duluth for Kingston. She is owned by Krauss of Cleveland, and insured for \$6,000 in the Continental. Captain Michael Galvin goes to Port Colborne, whence he will go with a tug to the King Sisters' assistance.

The propeller James Fisk, Jr., arrived from Chicago Sunday night. After discharging her cargo she will be laid up here and the damage caused by fire at Detroit will be repaired when convenient. A little of her flour was damaged by water thrown to quench the fire.

R. P. Fitzgerald of Milwaukee, was in port to-day. He was figuring on a new compound engine for the steamer J. Kershaw, of which he is part owner.

The papers in an important vessel sale were recorded here Monday. Mrs. Hamilton, who gained a large judgment against George W. Holt and others, has sold the iron propellers Scotia and Russia to James Ash, P. P. Pratt, F. L. Danforth and G. Barrett Rich, all of this city. The consideration for the two is \$10,000, of which about a third will be paid down in cash. The price is very low, as the steamers are well worth \$100,000 each in fair times. They are in excellent shape and condition, having only a few weeks ago been carefully overhauled after a long idleness. They were built here in 1871, carry about fifteen hundred tons each, and make twelve or thirteen miles per hour when loaded. They have water bottoms so that they can run light even in heavy weather. They will remain under the management of Ash and continue in the Duluth trade.

Last Thursday Judge Beckwith granted a motion directing the receiver of the late firm of Crosby & Dimick to pay over certain moneys and deliver certain notes to the Continental Insurance Company, on condition that the company deliver to the receiver a bond in a penal sum equal to the sum of the money and notes. The company is further conditioned to pay the receiver any sums which may be hereafter found due to Dimick or Crosby & Dimick. The bond is to be approved by a judge of the Superior court.

The new steamer Australasia left for Duluth Saturday afternoon with about 1,500 tons coal. She was in command of Frank R. Gebhardt, who qualified as her master during the day. Captain Gebhardt lives in this city and is a son of Captain Nicholas Gebhardt, the well-known master of the propeller Cuba. Though only 30 years old, Frank has had considerable sailing experience, mostly under the instructions of his father, who is one of the best of our lake mariners. Frank gives promise of doing good work, and he is certainly in a position where care and skill are required. His friends will wish him abundant success.

The tug J. W. Cramer is still on the lower end of Horse Shoe reef. She ran on last Friday evening while coming up from Tonawanda with the barge A. W. Wright. The tug James Ash answered her call for help, and towed the barge under the breakwater. The Ash then towed the life boat and crew to the Cramer. A line was made fast to the latter and the Ash tried to pull her off. The Cramer soon knocked a hole in her bottom and filled up. Her crew were taken off on the life boat, and the attempt to release her temporarily abandoned. On Saturday an effort was made to raise the Cramer between two canal boats but the boats were driven away by the stiff southerly wind. The Cramer is on the rocks in four feet of water. She is owned by Scanlon and others of Tonawanda, and valued at about \$3,500. She was built by G. H. Notter in 1874.

There was an advance of 5 cents in coal freights on Saturday.

The J. L. Williams, while passing through Emerald Channel in the Niagara River this morning, towing the Canadian schooner Twilight, broke down and the schooner drifted down the river. Her anchors were cast, but the chains parted, and she would have run into the International bridge but for the tug International, which rescued her.

KINGSTON.

Fraser's drydock, on which a mortgage was held by Captain Lewis, was sold by public auction, on the 21st, to A. Johnson

for \$800, the bidding done being chiefly between that gentleman and Captain Gaskin. Immediately after the sale the captain offered the purchaser \$1,000 cash for the dock. It was refused.

It is reported that the steamer Corinthian was ashore on a sand bar at Presque Isle and was unable to assist herself on account of her beam having broken. The steamer got on to the bar while trying to make the island for shelter from the gale, and her beam was broken in an effort to get off. It is understood here that she is in bad shape. The tug Hastings left to pull her off. The Corinthian is a Canadian steamer, and hails from Kingston. She belongs to the Richelleu and Ontario Navigation Company's line of steamers. She measures 427 tons, is valued at \$45,000, and rates A1. She is constructed of iron.

DULUTH.

Special to the Marine Record.

The schooner Midland Rover, eleven days overdue at Ashland from Port Arthur, has been heard from at Sault Ste. Marie. She was out in a terrible gale and completely dismantled.

A tug has gone from Bayfield to the schooner Alice Craig, ashore at Isle Royal.

MANISTEE.

The propeller Hilton, of Milwaukee, had a narrow escape from a disaster Monday. While in mid-lake her deck load of hay was discovered to be on fire. There was a heavy wind blowing, and it was only with the greatest difficulty that the flames were extinguished. The boat was damaged slightly. Her captain commends the crew for their prompt action in assisting to save the boat.

MILWAUKEE.

Christ Olson, a sailor, was lost overboard from the schooner W. H. Chapman at Manitowoc Monday night.

The barge Guiding Star is expected here. She struck on the Manitou Islands on Sunday and is leaking badly. She lost her foremast, cracked her mainmast, and lost all her head canvas in Sunday's gale.

FRANKFORT.

Special to the Marine Record.

The steamer Whiting, with wheat from Duluth to Milwaukee, came in port with her cylinder and feed-pipe broken. She also brought in the barge Guiding Star, lumber laden, from Ashland to Chicago, leaking badly, having pounded on the beach at Manitou Island last night. Her foremast is gone. Her pumps keep her clear.

SANDUSKY.

While the steambarge Sakie Shephard, of Huron, was leaving Port Clinton for this port Friday she struck a rock, broke her wheel, and bent her shaft pretty badly. She was brought here and hauled out on Captain Monk's marine railway. A new wheel has been sent for and her shaft is now being straightened.

CHEBOYGAN.

The body of a sailor was found on the beach near here on Friday. It is supposed to be that of Andrew Wilson, of the schooner Two Fannies, lost in the Straits a short time ago. His friends have been notified.

The schooner Dan Rogers, of the Alpena tow, sprung a leak on Lake Huron and arrived here with six feet of water in the hold. Extra men were hired to free her. The captain reports a big blow from the northeast and a heavy sea outside. The tow is destined to Buffalo with lumber from Lake Superior.

VERMILION.

The schooners M. Stalker and Havana are in port. They are stripping and will lay up for the season. The barge Lathrop with cargo of 300,000 feet of lumber for J. G. Gilchrist & Co. came in this evening and will probably lay up.

DEATH OF CAPTAIN WARD PLUMB.

Captain Ward Plum, master of the steamer Armstrong, died at the residence of his son-in-law, H. A. Reed, 2d ward, last Thursday morning, of pneumonia. A few weeks ago Mr. Plum was attacked with the epidemic which has prevailed so extensively in this region of country during the past three months. He recovered somewhat and came to Ogdensburg from Brockville, where he has lived during the past two years, to visit and to rusticate for a few days. Soon after arriving in the city he was taken with pneumonia, which terminated fatally. Captain Plum was the youngest son of Henry Plum and brother to L. R. and Isaac Plum. He was a native of Ogdensburg and has followed boating nearly all his life. He leaves a wife and three children. The funeral took place Sunday at 2 p. m., from the residence of his father, on Washington street.—Ogdensburg News.

A SAILOR'S YARN.

BY BARON JOE.

The story-telling hour had come when men, not wearied from their four hour's watch were sitting in the dimly lighted fore-cas'tle and quaffing sundry swallows of hot scotch. For even with a captain strict and mate severe the gally sailors always find a chance to bring on board their ship at port that which 'twould grieve their hearts to leave behind. And now the sailors who had been on watch the early part of this fair July night were anxious to be entertained by tales of wreck or stories of some gallant chieftain's might. All hands now called upon old Benjamin, or "Salty Ben," as he was chiefly named, for Ben could spin a yarn at any time and as a dealer in romance was justly famed. Pressing the bottle to his thirsty lips a long, a loving pull took Salty Ben, and then he placed the flask away beside his bed, beyond the quiet reach of other men. "Twas in the fall of '76," said Ben, and all the others in their eagerness to hear drew close their stools, and, so as not to interrupt when farther on, each took a parting sip of his good cheer. "I shipped on board the schooner Betsey May, a three-and-after tight and strong was she. We loaded her with coal in Buffalo Creek, and in a howling gale we put to sea. With waves and storms we battled long and hard, but when eight days we had been out at sea, our sailors, listening o'er the windward bow, could hear the siren sound at Skilligalee. And soon the Beavers and the Foxes Isles had far behind our vessels sunk from view, and up before us from the surging deep arose the northern Isle of Manitou. Down past this Island of the Indian's God we dashed with white spray flying high in air, and Captain Jackson, standing on the quarter deck, watched for the landmarks as the shore grew nigh. And soon he saw the proper point was passed, so with both hands to shelter his wide mouth he loudly to the sturdy steersman called 'head this good ship southwest by south, half south.' And now the wind was square abait the ship and mountains high the surging sea had risen. We winged the main and fore-sails squarely out and dropped the peak to scandalize the mizzen. Colder and darker grew the autumn night, and every wave that swept our gallant ship left, as it washed the ropes, and spars, and deck, a coat of white, like candles in a dip. And soon our boat was groaning 'neath a load of ice that heaped the deck and clambered up each mast, until she lost all semblance of a ship, and from each breast all rays of hope were cast. The crisis in the trip had come, when Captain Jackson seemed to strike a brilliant deal. He called the crew upon the quarter-deck, and thus did to the shivering crowd appeal: 'With your good help this vessel can be saved and sailed between those two Milwaukee piers, but every man must do his duty, trust in a higher power, yield not to fears. Now, who of those on board this ship can give a reason why the great United States should have a change in general government, or alteration in the regular tariff rates?' 'I can show reasons,' said Mike Donovan, 'why both these things would do the country good.' 'You can do no such thing,' said Jack McGuire, for Jack was always in an argufying mood. And then a row began. The like of it you never in your lifetime saw, and those who knew the least of politics were loudest in expounding common law. The clamor that they made arose and drowned the howling of the midnight gale, but as it did the temperature did higher get, and soon the ice's grip upon the ropes and spars began to fail. And down upon the icy deck, descending from the rigging high, and frozen sail, great icicles came thundering, and crumbling scattering o'er the gleaming rail. And those who in debating took no side were set to trimming as they do on land, and ax and spade did execution good, welded by this erstwhile disappearing hand. So o'er the monkey-rail and taff-rail, too, and over all the other rails about the craft, great cakes of loosened ice were fired into the surging billows and soon swept aft. Now as each chunk of ice into the lake was thrown the vessel higher from the water raised her head, and soon as trim as this good ship to-night the Betsey May toward Milwaukee sped. At daybreak wind and sea had calmed a bit, and argument upon the questions of the day was stopped because the weather had so sultry grown that coats were shed and sweating brows were mopped. And long before the evening of that day the Betsey May was snugly in Milwaukee moored, while many vessels quite as strongly built as she went down the night before with all on board."

USES OF ARCTIC EXPLORATION.

In three hundred years there have been some two hundred arctic voyages, for various purposes and with various fates. The Greely expedition was but one of thirteen expeditions. Five hundred men passed two winters within the polar circle, and nineteen of them only were lost. And Lieutenant Ray says that the result of the observations of all these expeditions will be the doubling the world's knowledge of the magnetic forces. That is to say, as the Rev. Brooks Herford states in his admirable sermon upon this subject: "Not one of all the thousand and ten thousand craft sailing to and fro among the many lands of earth but will be a little surer of its compass, a little closer in its

reckoning, a little safer, than it ever was before." Is this worth nothing? Is not the risk, the loss, even simply recompensed? But also, as Mr. Herford points out, the moral qualities, the patience, the courage, the self-denial, the faith, the endurance, developed by these northern researches are incomparable. "There is simply no other chapter in the history of human doings to be compared with it. Beside it the adventures of commerce and conquest look greedy and base, the stories of chivalry are mere tinsel, the long heroism of the Crusades seems a fevered frenzy." *Cui bono?* Is not an argument to discourage the restless soul which the prospect of peril inspires, nor will the pathetic and generous endurance, amid apparently remediless suffering, which the record of the Greely expedition discloses dismay or deter other Greelys from daring the same dangers. The arctic story is one of the saddest, but it is also one of the noblest, in the annals of human heroism.—*Harper's Magazine for October.*

STATISTICS OF STEEL SHIPBUILDING.

Mr. John Haug, surveyor to the British Lloyds, writes to the Public Ledger, under the above head, as follows:

"Since December 20, 1877, when the committee of Lloyds' register first sanctioned the use of this material, twenty per cent thinner than iron, for shipbuilding, the tonnage and number of steel vessels cleared in Lloyds' register have been as follows:

"1878—7 steam vessels, 4,470 tons;
"1879—8 steam vessels, 14,800 tons; 1 sailing vessel, 1,700 tons.
"1880—21 steam vessels, 34,031 tons; 2 sailing vessels, 1,342 tons.
"1881—20 steam vessels, 39,240 tons; 3 sailing vessels, 3,167 tons.
"1882—55 steam vessels, 113,364 tons; 8 sailing vessels, 12,447 tons.
"1883—91 steam vessels, 98,331 tons; 10 sailing vessels, 14,018 tons.

"A steel ship costs from eight to ten per cent more than an iron ship of the same size, but its greater carrying capacity will enable it to pay off this increased cost in two or three years. A steel vessel built for the Spanish ore trade, carrying 1,300 tons, cost, in 1877, £18,350; an iron vessel of the same size would have cost £17,000, but would only carry 1,200 tons of ore. The extra net earnings of the steel vessel, due to the eighty tons extra carrying capacity, were £560 per annum. As steel is gradually approaching iron in price, the difference in the cost of iron and steel ships will grow less, and, as the latter material is growing more uniform and reliable, perhaps a greater reduction of thickness than twenty per cent will be admissible.

"The first sea-going vessel built of steel in the United States is Mr. William Astor's steam yacht Nourmahal; she has been constructed in accordance with Lloyds' rules, under special survey, to class 100 A1, and the numerous samples selected from her materials for tests, required by Lloyds' rules, have mostly exceeded the tenacity and ductility required by the rules."

A TALE OF THE SEA.

The sea has lost half its romance in these days of floating palaces and fast steaming. It has few terrors for the modern voyager. A trip across the Northern Ocean is but a holiday excursion. Angry billows and howling storms, dangers and sudden death are not now often associated with ocean life. Even the stranding of an emigrant steamer upon a rocky and desolate coast fails to impress upon our minds the great tragedies inseparable from a sea life. We read Marryat and Clark Russell, but we laugh at the perils so well depicted. Yet oftener than is supposed, such tragedies as the Mignonette case make prominent the fact the deep has lost none of its dangers. Today brings another story of the hardships and tragedies of a sailor's life, that cannot but impress by its very strangeness. The German bark Friedrich Scalla sailed from Stettin on July 11th, under command of Captain Hoffschild, for Charleston, S. C. A hurricane was encountered on September 12th, in latitude 29 N., longitude 54 W., during which all the spars were lost and the vessel sprung a leak. By keeping the hands constantly at the pumps the vessel was kept afloat until the 21st. On that date the brig F. I. Merryman, from Bathurst, W. C. A., for Boston, was fallen in with. Captain Hoffschild got out his boats and boarded the brig. He found that her captain (Nickerson), both the mates, and some of the crew had died after leaving port. The brig was in charge of the steward and two men, and had been without a navigator on board for eleven days, and was short of provisions and water. Captain Hoffschild, finding it impossible to save his own vessel, placed his crew on board the Merryman, took charge of her and arrived with his new command at New York yesterday. Here is a tragedy of the sea, strange, sadder than any told in fiction and yet it is but one of many that can be gleaned from a year's history of sea-faring life.—*Maritime Register.*

It is predicted that there will be a heavy lake shipment of corn from Chicago in a few days.

The Italians at work for the Union Steamboat Company at Buffalo have struck for higher wages.

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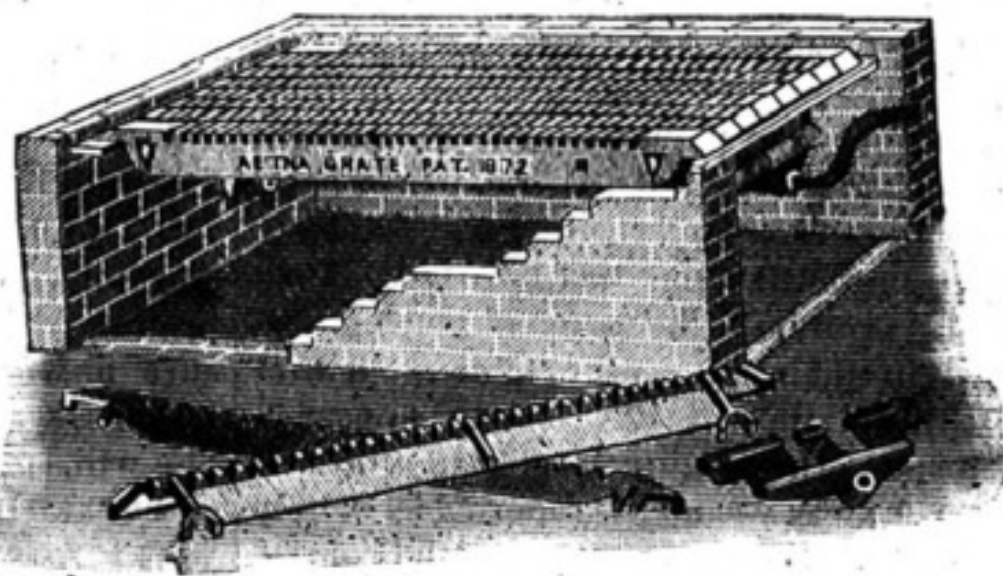


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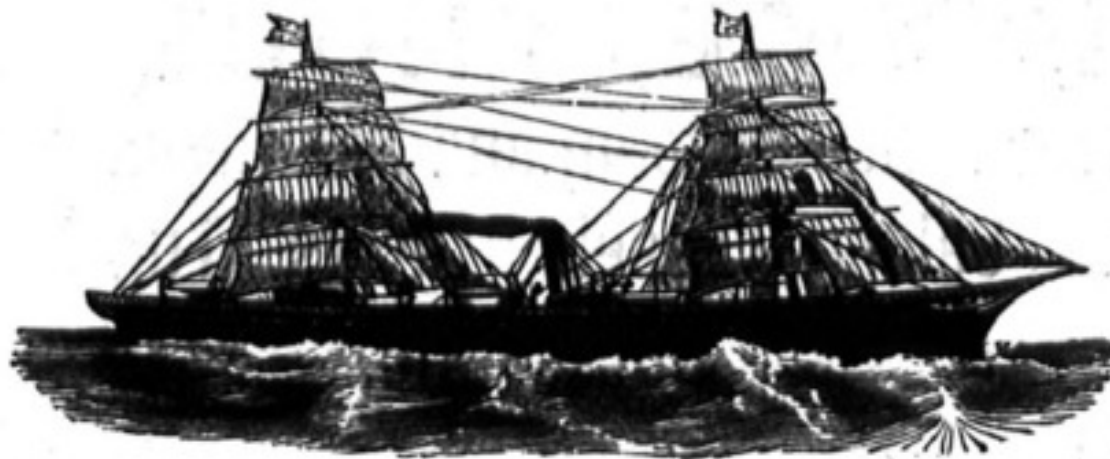
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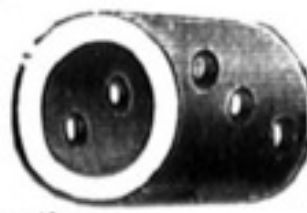
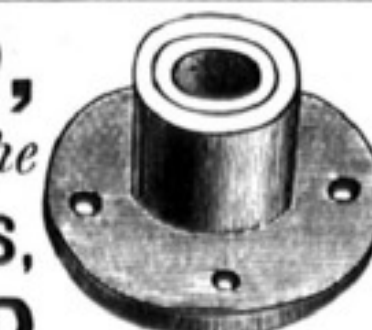
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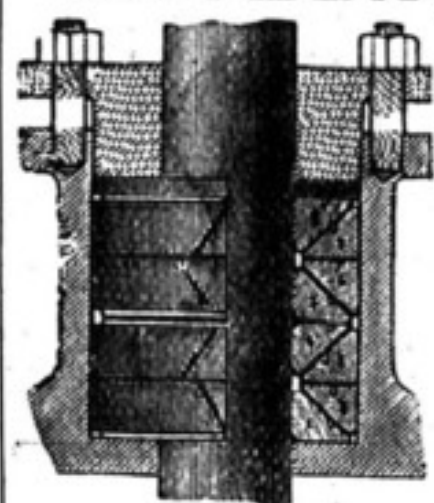


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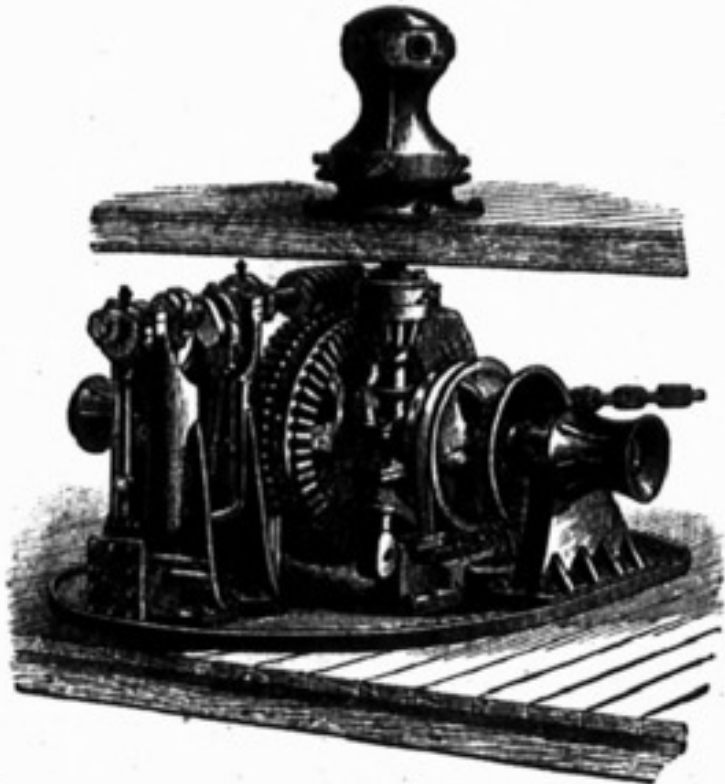
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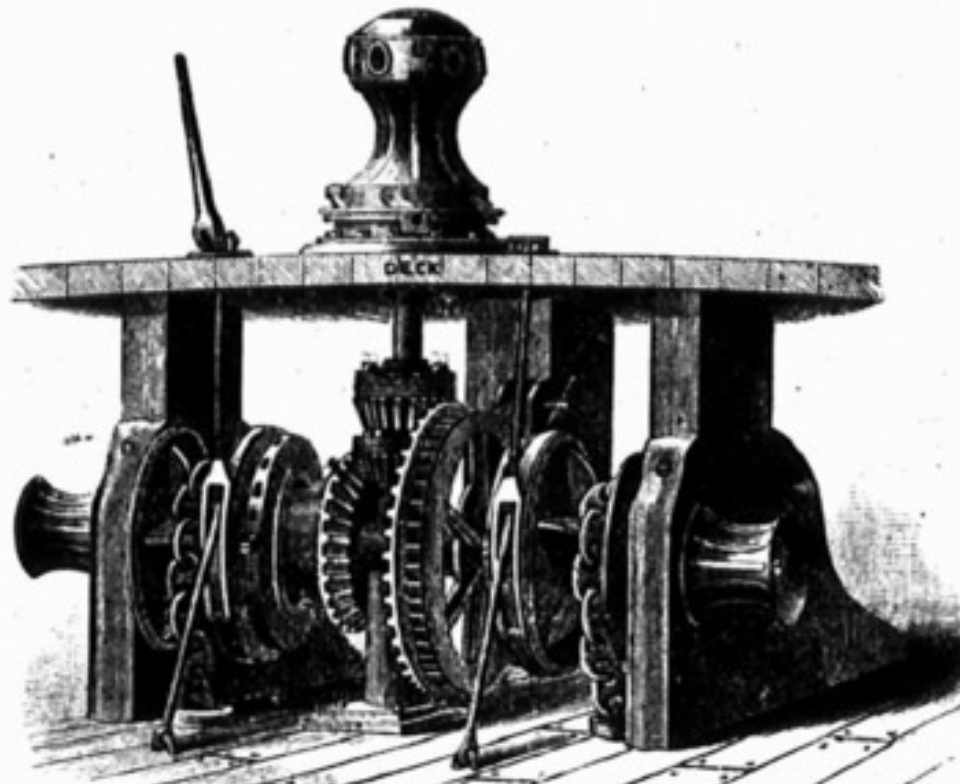
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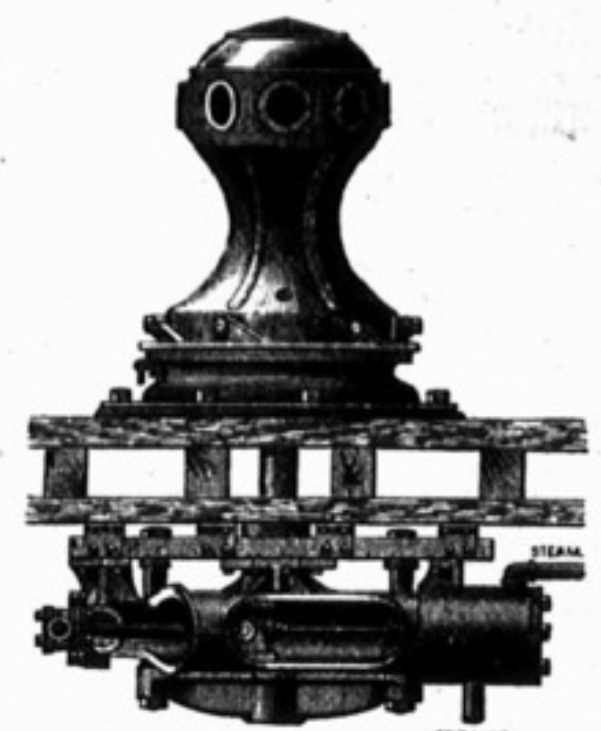
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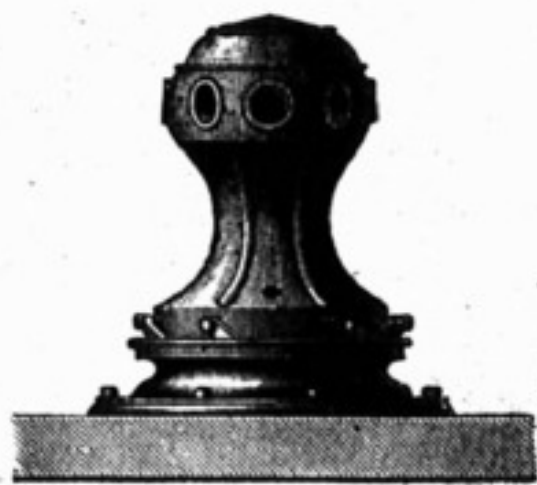
The Providence Patent Steam Capstan Windlass, New Style.



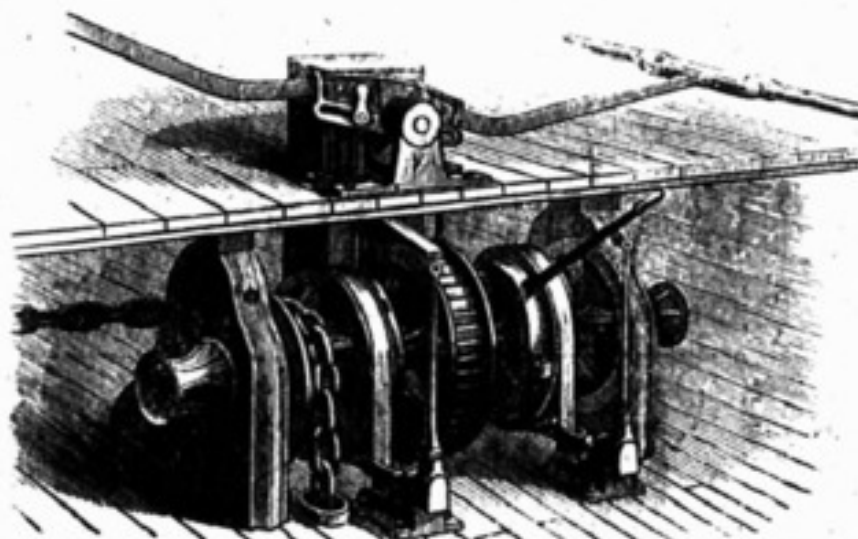
The Providence Patent Capstan Windlass.



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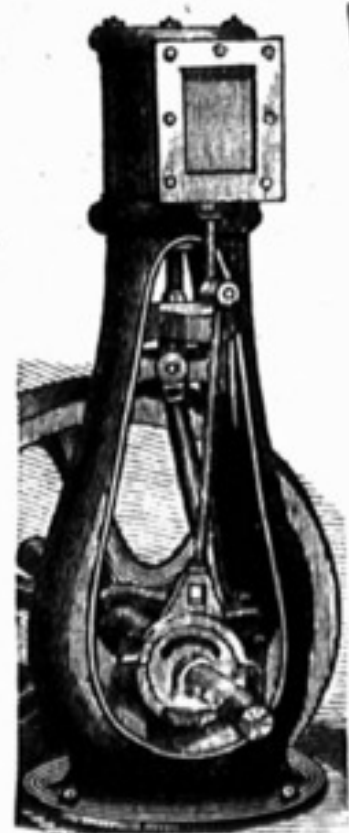
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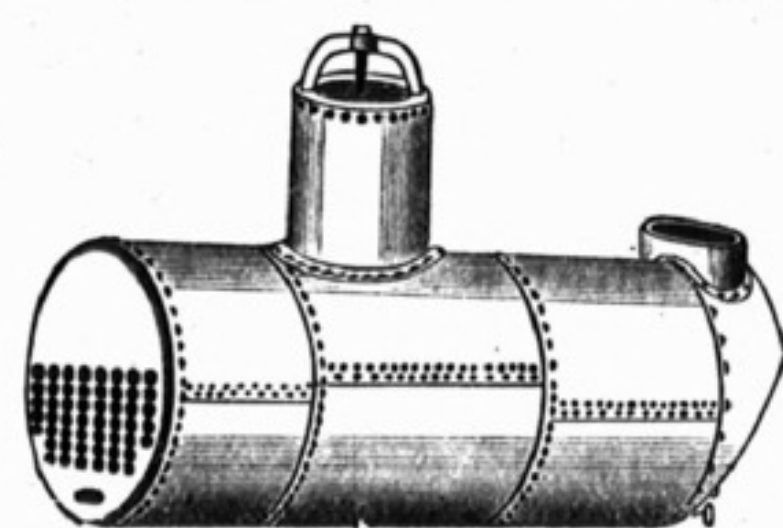
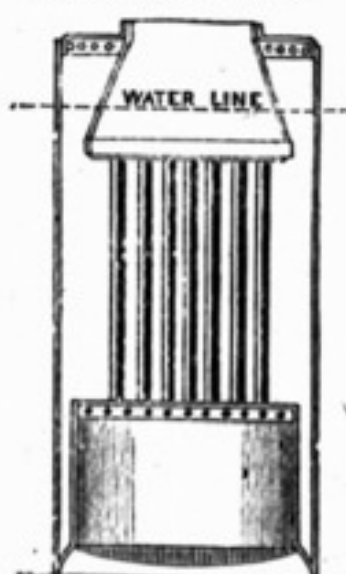


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BOILERS.

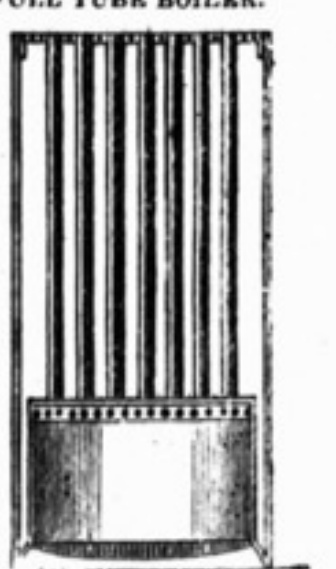
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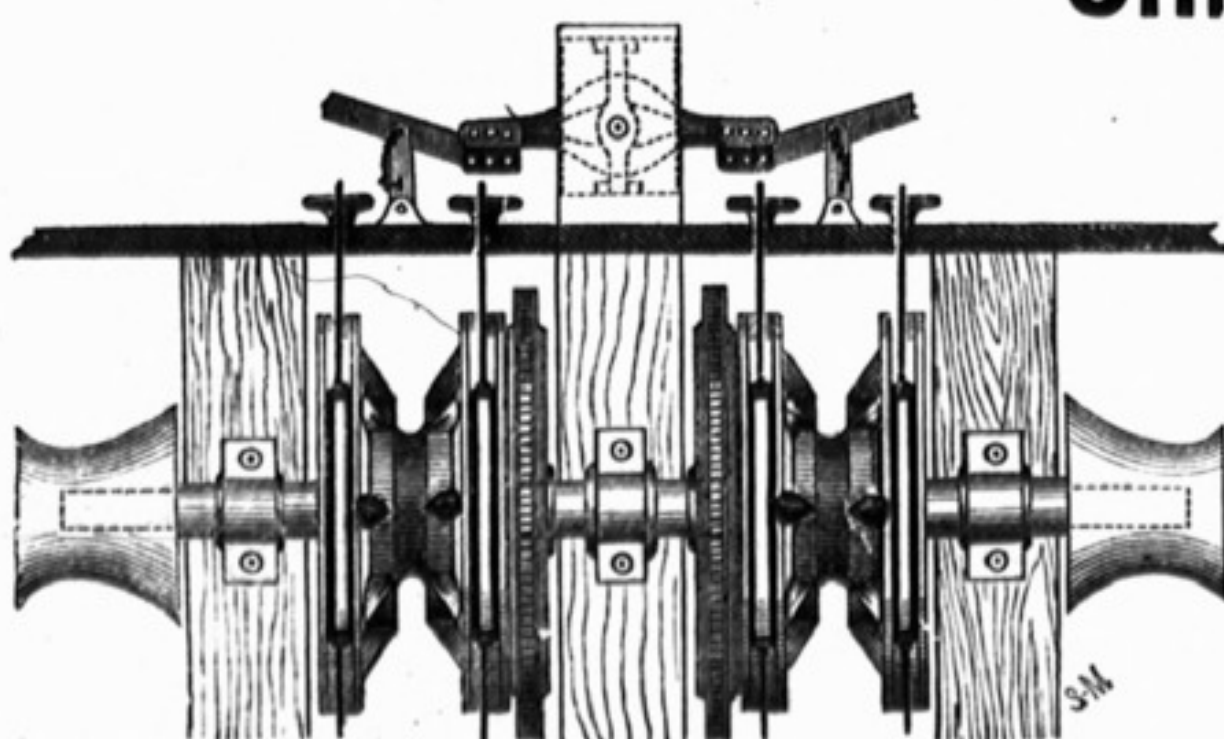


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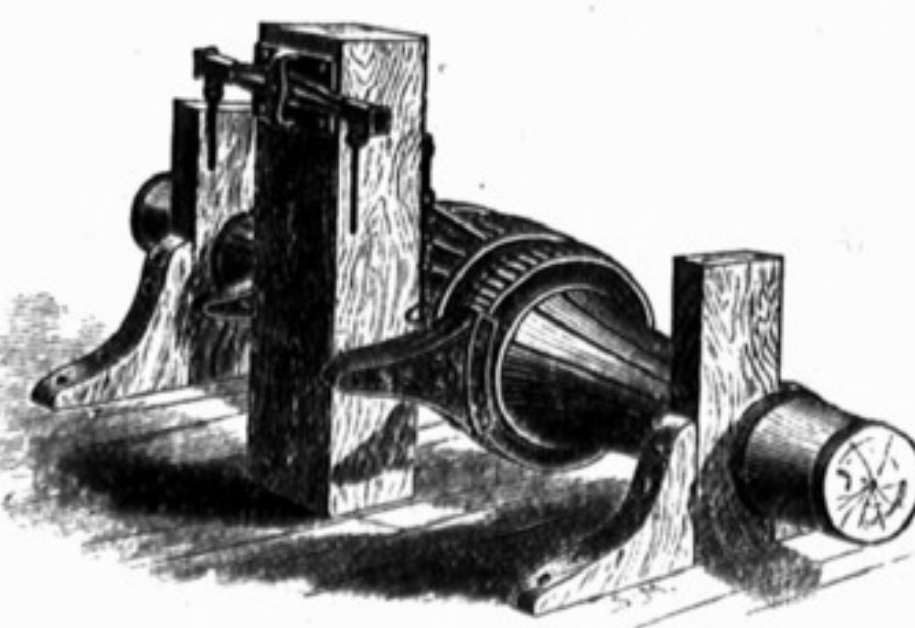
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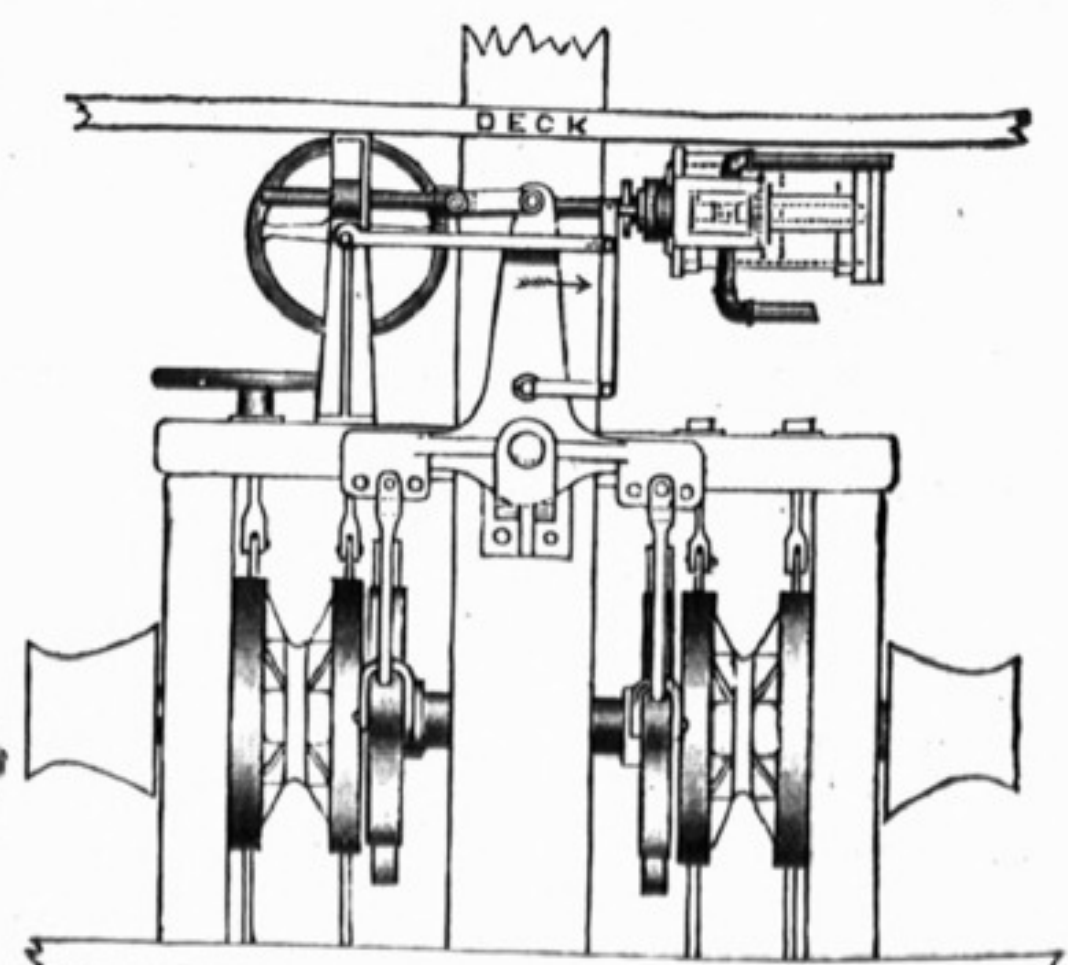
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The Common Patent Windlass.



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